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OVERVIEW OF THE PREHISTORY
AND HISTORY OF
INLAND SAN DIEGO COUNTY

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**UNITED STATES DEPARTMENT
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ABSTRACT

The Wirth Associates San Diego Cultural Resource Office contracted with the Bureau of Land Management, Riverside District Office to prepare a Class I Narrative Cultural Resource Overview of the Otay-Hauser Mountain, McCain Valley and Inland Valley study areas (CA-060-RFP8-22). With the exception of a small portion of southern Riverside County, all of these study areas are located in San Diego County. The Overview includes a narrative on past environments of the San Diego County area and provides a general review of previous ethnographic, archaeological and historical research conducted in the area. The territories, settlement-subsistence patterns, social organization, ceremonies and material culture of the Luiseno, Cahuilla, Diegueno and Cupeno are described. The historical themes and land use patterns represented in inland San Diego County are reviewed in detail. The general concerns of contemporary ethnic groups are presented. The potential research value of the BLM administered lands in the three areas is discussed and suggested management options are included.

EXECUTIVE SUMMARY

The Class I Cultural Resource Overview study areas include the Inland Valley, McCain Valley and Otay-Hauser Mountain areas (See Figure 1). The boundaries of these study areas were delineated by the Bureau of Land Management, Riverside District. With the exception of a small area within southern Riverside County, all three areas are located in San Diego County, California.

The objective of the McCain Valley Area, Inland Valley Area and Otay-Hauser mountain Area Class I Cultural Resource Overview, according to BLM, is as follows: (1) to provide a framework to assist in assessing cultural resource site and locality significance and relationships between cultural resources within the defined areas; (2) to provide guidance as to the meaning and interpretation of sites and other cultural resources found during future on-the-ground surveys; and (3) to provide background data for cultural resource sections of the McCain Valley Environmental Impact Statement that is to be prepared.

In addition to those management objectives outlined above, Wirth Associates assumed that the Cultural Resource Overview should serve to facilitate future anthropological and historic research in San Diego County by presenting a synthesis of available literature and a compilation of selected base data. The intent was to prepare a document that: (1) meets the needs of the individual who is interested in the general history and prehistory of inland San Diego County; (2) provides sufficient data and documentation to direct the researcher to pertinent references and sources for more detailed information and (3) provides a data base from which regional and subregional research designs can be generated.

The BLM contract was awarded to Wirth Associates at the end of March 1978. Contacts with BLM regarding the contract began in early April. Data collection also began in April although most data was collected during the months of May and June. Report preparation began at the end of June and continued through July, as did some data collection.

METHODOLOGY

Basically the BLM request for a proposal detailed two tasks: (1) preparation of a Cultural Resource Overview and (2) a known cultural resource site record compilation.

Records Search

The contract called for updating the BLM site record files for those sites on or immediately adjacent to BLM administered lands in the three study areas.

In order to accomplish this, record checks were conducted at the following institutions:

San Diego State University

San Diego Museum of Man

University of California, Riverside

Anza Borrego Desert State Park

Cuyamaca Rancho State Park

San Diego County Integrated Planning Office

State Historic Preservation Office

Site locations were plotted on 7.5' USGS topographic quadrangles provided to Wirth Associates by the BLM. Copies of site records were obtained from the institutions and compiled for presentation to the BLM.

In general, the collection of the data presented in the Overview involved a review of published and unpublished literature pertinent to the prehistory and history of the study areas. Additional information was received through a contact program conducted through the course of the study. A number of subjects were addressed through this research process and are summarized below.

PLEISTOCENE AND RECENT ENVIRONMENT OF SAN DIEGO COUNTY

At the end of the pluvial, 12000 years ago, a woodland environment dominated the study area. Increasing aridity (10,000 - 7,380 BP), combined with human and environmental forces hastened the replacement of conifers and oaks by grasses, chaparral and coastal sage scrub. Coniferous and woodland communities were limited to higher elevation in the Peninsular Ranges. From 7,380 - 6,250 BP, there was a drier-warmer climate. Ocean water termperature also reflects a prolonged mild climate during this time. From this period on, short term reversals occurring at 4,000 - 3,000 BP and at 16000 - 600 BP are exceptions to an otherwise stable climatic sequence.

PREVIOUS RESEARCH

Previous research in San Diego County has been divided into four categories. The framework provides a temporal perspective and parallels basic anthropological trends. Allowing for bias which tended to overemphasize the exotic, early expedition and mission reports contain valuable information. Observations by Cabrillo in 1542 and Vizcaino in 1602 are among the initial historical sources. Anza's California expeditions and Father Francisco Garces' travels during 1774 - 1775 are documented. Mission records provide pertinent data; Boscana's Chingninchnich (1846) is an excellent sources.

During the early 1900s the University of California Publication in American Archaeology and Ethnology contained many articles concerning Southern California Indians. Individuals such as C. DuBois (1908), A. L. Kroeber (1925), E. W. Gifford (1918), L. Hooper (1920), P. S. Sparkman (1908), L. Spier (1923), W. D. Strong (1929) and T. T. Waterman (1910) prepared reports in this series.

During the 1880's several important historical works were published. Herbert Howe Bancroft's (1884) History of California, Wallace W. Elliott's (1883), The History of San Bernardino and San Diego Counties and Zephyrin Englehardt's (1920, 1921) San Luis Rey Mission and San Diego Mission are a few. In 1927 Joseph Hill (1927) published the History of Warner's Ranch and Its Environs.

A broad range of ethnographic material was collected from 1930 to 1960. Malcolm Rogers (1936) conducted ethnographic research on Yuman pottery making. Philip Drucker's (1937,1941) highly informative cultural element distribution lists were prepared. Pleistocene Man at San Diego (Carter 1957) presents the case for Paleolithic man in San Diego. Data from the San Vicente Lake Bed project and from the Fallbrook site combined with Meighan's investigations of SDi 132, resulted in Meighan's designation of the San Luis Rey I and II complexes (1954). Research by D. L. True (1958) resulted in the designation of the Pauma Complex.

In 1955, Hero E. Rensch published his account of Pedro Fages' crossing of the Cuyamaca Mountains. The Battle of San Pasqual of 1846 was authoritatively analyzed by Arthur Woodward in Lances at San Pasqual. One of the best accounts of the cattle-ranching boom of southern California was Robert Glass Cleland's The Cattle of on a Thousand Hills (1941).

Recent sources dealing with linguistic, demographic, kinship, ritual autobiographical and material culture studies have been published for all the Native American groups in the study area. A description of these sources can be found in the annotated bibliography. Recent publications have been oriented toward establishing a more definitive chronology for San Diego County and investigating prehistoric cultures within an ecological framework. A large number of archaeological surveys have been conducted in or near the three study areas, particularly in the McCain Valley study area.

Since 1960, a series of useful works were written on the history of inland San Diego County. In 1961, E. I. Edwards published an excellent study of Lost Oaises along the Carrizo. D. E. Lindsay published her thesis on the history of the Anza-Borrego Desert in 1973. Lester Reed's Old Time Cattlemen and Other Pioneers of the Anzo-Borrego Area (1963) is valuable. In 1960, the first volume of Richard Pourade's comprehensive History of San Diego was published.

PREHISTORY

The prehistory of San Diego County has been traditionally divided into four stages.

Early Man

[illegible] of artifactual material has caused problems in defining the Early Man stage. The proposed existence of early man was initially based on "artifactual" deposition at the Texas Street site in San Diego. More recently, a similar assemblage has been discovered at the Buchanan Canyon in San Diego. The conclusions, however, have been criticized by those who suggest that the "artifacts", which are dated as older than 35,000 years BP, are naturally burned and fractured stones. Amino acid racemization has been used for the dating of skeletal material from the San Diego coastal region. Dates of 28,000, 44,000 and 48,000 have been obtained. The dating technique has been regarded with some skepticism.

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San Dieguito

The earliest generally recognized population to inhabit the study areas is referred to as the San Dieguito Complex. It has been hypothesized that they came to the area 10,000 to 11,000 years BP and persisted until approximately 7,500 years BP. A large number of cutting and scraping tools in the artifact assemblage are indication of hunting activities. Four phases, San Dieguito I, II, III, and IV have been proposed.

La Jolla

It is believed that the La Jolla Complex, appeared in the area approximately 7500 BP (Although the La Jolla cultural remains are mainly located to the west of the study area, the complex is of regional importance and is, therefore, included in the discussion).

It has been suggested that La Jollan peoples migrated from the interior regions of southern California. The period is primarily defined by the appearance of milling implements, crude percussion flaked tools, flexed burials, and basketry. The continuity of the artifact assemblege implies a stable gathering economy which may have been semi-sedetary. La Jolla sites are generally located on rocky foreshores, old terraces and mesas surrounding lagoons. About 3000-4000 BP, site locations shift geographically to areas farther inland. A midden site (SDi-560) in the inland San Marcos area contained shell and suggests that there may have been contact with coastal people or that coastal people may have migrated seasonally to inland areas. This inland complex is the Pauma complex. The terminal date of the La Jolla complex is uncertain.

Late Prehistoric

The beginning of the late prehistoric period is generally marked by the establishment of the Shoshonean culture (San Luis Rey I and II) in northern San Diego County, and the Yuman culture (Cuyamaca) in the southern portion of the county. Both seem to reflect hunting-gathering economies with an acorn based subsistence. Settlement 5 appears to become more sedatary. Characteristic materials consisted of bedrock

sp?

grinding, portable grinding implements, small, tringular projectile points, the use of both percussion and pressure flaking methods, rock art and cremations.

ETHNOGRAPHIC BACKGROUND

Territories

Within the study areas four tribal groups are identified; Dieguено, Luiseno, Cahuilla and Cupeno. The Luiseno resided in an area west of the San Jacinto Mountains to the coast. The Cahuilla territory extended from San Bernardino Range south to the Borrego Valley. The Dieguеno region has been divided into two and sometimes three areas, encompassing an area from 33° 15' latitude in the north to 31° 30' latitude in the south, and from the coast east to the Imperial Valley. The Cupeno region encompassed the entire Valle de San Jose and surrounding mountain foothills.

Settlement Subsistence Strategies

Prehistorically, the aboriginal groups practiced a hunting-gathering economy, shifting locations within defined territories in response to the seasonal availability of food resources.

A series of permanent village locations occupied by separate linages were the foci of the territories. From the village site approximately 80% of the food resources were located within a two to five mile radius. Excursions for collection of faunal and floral resources were generally limited to one day. Longer trips of two days to several weeks might occur with the seasonal gathering of major floral resources. The cyclical pattern of resource exploitation was carried out in a vertical manner, crosscutting various life zones and affording access to faunal and floral resources. Aboriginal groups began gathering within the lower canyons and river bottoms and moved progressively to higher elevations throughout the year, as plant resources became available. In the spring, gathering took place in the lower reaches of the territory. Bulbs, greens and agave were then ready for harvest. In summer, berries, fruits and seeds of the chaparral-covered slopes ripened and were gathered. Acorn was unquestionably the most important food source. Excursions to mountain oak groves were made from October to November. During winter, few resources were available, populations subsisted on stored food and faunal resources. Incorporated into the aboriginal hunter-gatherer subsistence strategy were environmental manipulations, including the cultivation of native plants and possible cultivation of introduced plants.

Social, Political and Religious Organization

This section describes the general features of aboriginal social, political, and religious organization for tribal groups within the study area. Important positions attendant to these categories are also discussed. The pattern which emerges is one characterized

by broad cultural homogeneity throughout the region accompanied by minor intergroup variation.

Autonomous, exogamous, patrilineal lineages were basic to social organization while the sib, clan, or tribelet assumed considerable importance as well. Dual organization in the form of moieties was common.

The residential group occupying a common territory was usually composed of a single kinship unit. Marriages were arranged on the basis of economic as well as kinship considerations and established a strong permanent reciprocal relationship between families and wider kinship groups. Positions of leadership were commonly clan based and combined political and religious functions. Important political positions were passed from father to eldest son although other lineal male relatives and women were eligible. Generally a political leader was assisted by a ceremonial leader while a number of religious specialists performed lesser ceremonial functions. Throughout the region civil and ceremonial duties were combined in single offices. This was true for the more important political and religious positions and those of lesser significance. Power in both realms could be inherited, learned, or achieved through supernatural means.

Trade

Trade was indispensable for group survival. It allowed groups to obtain resources and dispense surplus. Barter was the most prevalent form of trade, although purchase of goods (with shell beads) is common. Trade relations existed within and between cultural groups. Food and "treasure goods" were exchanged. Exchanges took place during ceremonies and through individual liaisons. See Table II in the Trade section for a summary of materials traded.

Material Culture

Homes were designed for protection against the elements. Construction consisted of vertical poles pulled together, tied and then thatched. Two basic shapes resulted, a gable and a dome. Floors may have been excavated. Earth was sometimes used to cover the structures. Stone enclosures are also documented within the study area. Rock shelters and caves are known to have been used for habitation. Village sweat houses, larger than habitational dwellings are known. Ceremonial houses, wamkish are documented.

Bedrock and portable rock slicks, metates and mortars are documented for the area. Stone manos and pestles are the grinding implements which were used in the milling processes.

Bows and arrows were primary hunting implements. Bows were generally four feet in length and made of mesquite or willow. Bowstring were manufactured of both fiber and sinew. Arrow shafts were made of wood, sometimes the point was sharpened, at other times stone projectile points were attached. Obsidian, quartz and other

silicious materials were fashioned into projectile points of varying form. Arrowshaft straighteners were of grooved and polished steatite. Wooden throwing sticks, stone tools, shell and cactus needle fish hooks are also part of the inventory of hunting implements.

Baskets and pottery were used by aboriginals throughout the study area. Baskets were generally coiled of natural fibers. Design elements include representations of natural elements and geometric designs. Different forms existed depending on the functional nature of the basket. Coiled carrying caps, milkweed sacks and saddle blankets were also manufactured. Ceramic forms include bowls, dishes, wide and constricted mouth ollas, ladles and pipes. Use of both fine and gravelly clays are reported. Tempering was accomplished with crushed sherds, sand and finely crushed rock. Color of the clay varied from red to dark brown and grey. The method of manufacture was coiling followed by the paddle and anvil technique. Little decoration was used, primarily line, triangle and circle motifs were incised or painted on. Pipes were generally bowed in shape.

Rock art such as pictographs, petroglyphs and cupules are prevalent throughout the study areas. Color and element are the diagnostic features of pictographs. Black, red and white colors exist. Geometric and animal forms are found. Designs are diagnostic for the areas in which they are located. Several types of ceremonial mortars were produced. Burial practices result in a number of archaeological manifestations. Bodies were cremated and either buried or reintered in ceramic ollas.

HISTORY

The history section outlines past land use and settlement patterns distinctive to inland San Diego County and the resources associated with them. Three cultural periods are identified, Spanish Mission (1769-1834), Mexican Ranch (1834-1846) and Anglo American Hinterland (1846-Present). Native American history is discussed for each period.

Spanish Mission Period (1769-1834)

During the Spanish Mission period Western culture was introduced into the inland County. The missionaries established cattle ranches, agricultural fields and subsidiary missions, particularly in the Inland Valley study area. After Mexican independence (1821) the missionaries retained control of most of the lands, but ranches began to be granted to civilians (Californios). The 1820s and early 1830s were characterized by attempts to establish a mail route to Arizona through Warner's Pass, incursions by Anglo American fur trappers and cattle ranching. Many Native Americans were influenced by the missionaries, but others maintained their traditional way of life.

Mexican Ranch Period (1834-1846)

During this brief period, the California-born descendants of the pioneer settlers and a few Anglo Americans devoted themselves to cattle ranching. Native Americans lived in close association with them.

Anglo American Period

Cattle Country Phase (1846-1867)

The Anglo American period can be said to have begun when the Army of the West entered San Diego County through Warner's Pass, which became the principal entry into southern California during the Gold Rush. With the demand for beef created by the influx of miners in northern California, cattle ranchers throughout southern California prospered.

Post-Civil War Phase (1867-1882)

After the end of the Civil War, Southern emigrants arrived in great numbers, San Diego's "New Town" was promoted as a transcontinental railroad terminus, and gold was discovered in Julian. As a result, Anglo Americans settled in most of the inland county, displacing Native Americans and Californios. The inevitable transition to farming was made. This was marked by the passage of the No Fence Act of 1872. By the late 1870s, most of the best arable land was in private hands. In the mid-1870s Indian Reservations were created by Executive Order.

Railroad Phase (1882-1919)

During the 1880s railroads were constructed along the coast and as far inland as Foster and Escondido in the Inland Valley study area. Water resources in inland San Diego County began to be developed, and orchards became the economic mainstay of western San Diego County. The desert slopes of the McCain Valley study area began to be settled, and cattle was grazed in the Colorado Desert.

During the 1890s Indian Reservations were finally patented. Early in the twentieth century the San Diego and Arizona railroad was constructed through Mexico and southern San Diego County.

Modern Phase (1920 - 1978)

After World War I the history of inland San Diego County was subsidiary to that of San Diego, which became a Navy and industrial city. In inland San Diego County agriculture became specialized and recreational areas were established in the mountain and desert areas of McCain Valley study area. Especially after World War II,

urbanization spread to the inland County, particularly to the Inland Valley study area but also to the western portion of the Otay-Hauser Mountain study area.

CONTEMPORARY ETHNIC GROUPS

It is important to recognize that contemporary ethnic groups, such as the Mexican Americans and Native Americans who have lived, and currently do live in inland San Diego County, may attach special importance to places associated wtih their cultural heritage. Attempts have been made in the course of preparing this Overview to document areas which might be of significance to resident ethnic populations by means of reviewing available literature and by direct solicitation of information.

RESEARCH DIRECTIONS AND SUGGESTED MANAGEMENT OPTIONS

In spite of the amount of research that has been conducted in San Diego County, few issues have been resolved regarding the prehistory and history of the area. Major questions pertaining to the paleoenvironment, cultural chronology and the processes that contributed to the development of prehistoric lifeways in San Diego County are unresolved. Information on both the prehistory and history of the specific study areas is limited.

Given the distribution of BLM-administered lands in San Diego County, it is unlikely that broad research questions can be answered through a systematic survey of the area. There are more specific research questions, however, that can be investigated.

Because of its clearly defined climatic-physiographic regions and its rapid cultural succession, inland San Diego County presents an excellent opportunity for the study of cultural ecology and historical geography. A study of the 1870s and 1880s, when inland San Diego County made its transition from cattle ranching to farming and came within the reach of the railroads, would be extremely fruitful. There is also ample opportunity for oral history research on cattle ranching, early settlements, and Native and Mexican American history. Finally, the technological history of well-drilling, irrigation, cattle ranching, mining, prospecting and house-building in the inland County could be of value to historical archaeology.

The BLM is required to identify, evaluate and protect prehistoric and historic cultural resources on public lands unders its jurisdiction. In order to accomplish this goal the following management options are recommended:

(1) establish an on-going Native American contact program;

does identify [illegible] what research questions are likely to be asked?

(2) survey strategies applied to BLM lands should be selected on the basis of the research questions that are asked;

(3) priority should be given to those areas that will be subject to developmental or other impacts in the near future;

(4) apply the survey strategies used in the Yuha Planning Unit when conducting surveys in McCain Valley;

(5) nominate those properties that appear to meet the criteria of evaluation to the National Register of Historic Places and prepare preservation plans on those properties;

(6) coordinate with local institutions in the preservation of cultural resources.

ORIENTATION

STUDY AREA DESCRIPTION

The Class I Cultural Resource Overview study areas include the Inland Valley, McCain Valley and Otay-Hauser Mountain areas (see Figure 1). The boundaries of these study areas were delineated by the Bureau of Land Management, Riverside District. With the exception of a small area within southern Riverside County, all three areas are located in San Diego County, California. (see Figure 1).

Although there are some exceptions, the BLM-administered lands in San Diego County are located within these areas. Over half of the BLM-administered lands in San Diego County are located in the McCain Valley study area. Most of the lands in the southern portion of the McCain Valley study area between Cleveland National Forest and Anza Borrego Desert State Park are BLM-administered. Within this study area BLM-administered lands are also located to the southeast and north of Banner Canyon; in the San Felipe Hills and in the San Ysidro Mountains.

Most of the contiguous BLM-administered lands in the Otay-Hauser study area are located in the Otay Mountain area, Hauser Mountain area, and northeast and southeast of Campo. A small percentage of the lands in the Inland Valley area are BLM-administered and, in general, the parcels of land are small, widely scattered and near the eastern boundary of the study area.

OBJECTIVES AND ASSUMPTIONS

The Bureau of Land Management is required to identify, evaluate and protect prehistoric and historic cultural resources on public lands under its jurisdiction and to insure BLM initiated or authorized actions do not inadvertently harm or destroy non-federal cultural resources. According to the BLM, these requirements are mandated by the Antiquities Act of 1906; the Reservoir Salvage Act of 1960; as amended by P.L. 93-91; the National Historic Preservation Act of 1966, as amended; the National Environmental Policy Act of 1969; and Executive Order 11593.

In accordance with the requirement to identify and evaluate cultural resources, the BLM has established the Class I, Class II and Class III Cultural Resource inventory levels (Procedures Manual 8110). In general, the Class I Inventory is designed to accumulate existing data. Surveys are not conducted at this level of investigation and decisions regarding disposition of cultural resources are not made. The Class II level of inventory is intended to "predict cultural resources" (based upon a sample survey) in an area of consideration. The purpose of the Class III inventory is "to identify and record, from surface and exposed profile indications," all cultural resource sites within a specified and defined area.

More specifically, the objective of the McCain Valley Area, Inland Valley Area and Otay-Hauser Mountain Area Class I Cultural Resource Overview according to BLM is as follows: (1) to provide a framework to assist in assessing cultural resource site and locality significance and relationships between cultural resources within the

FIGURE 1

defined areas; (2) to provide guidance as to the meaning and interpretation of sites and other cultural resources found during future on-the-ground surveys; and (3) to provide background data for cultural resource sections of the McCain Valley Environmental Impact Statement that is to be prepared.

In addition to those management objectives outlined above, Wirth Associates assumed that the Cultural Resource Overview should serve to facilitate future anthropological and historic research in San Diego County by presenting a synthesis of available literature and a compilation of selected base data. The intent was to prepare a document that (1) meets the needs of the individual who is interested only in the general history of inland San Diego County; (2) provides sufficient data and documentation to direct the researcher to pertinent references and sources for more detailed information and (3) provides a data base from which regional and subregional research designs can be generated.

METHODOLOGY

Basically the BLM request for a proposal detailed two tasks: (1) preparation of a Cultural Resource Overview and (2) a known cultural resource site record compilation.

Records Check

In order to accomplish the latter, record checks were conducted at the following institutions:

San Diego State University

San Diego Museum of Man

University of California, Riverside

Anza-Borrego Desert State Park

Cuyamaca Rancho State Park

San Diego County Integrated Planning Office

State Historic Preservation Office

The contract called for updating the BLM site record files for those sites on or immediately adjacent to BLM administered lands in the three study areas. According to the contract, the BLM site files included all site records inclusive through 1975. The site record files that had been obtained from San Diego State University, for the most part, were complete. The topographic maps with site locations were not; a number of sites had not been plotted on the maps although the site forms were on file. In addition, while a number of San Diego Museum of Man sites were plotted on the base maps, the BLM retained no site files for them.

In order to comply with the contract and to provide the BLM with what we considered to be necessary information, the procedures outlined below were followed.

1. The boundaries of all BLM-administered lands in San Diego County were outlined on the BLM site base maps (7.5' and 15' U.S.G.S. topographic quadrangles) not just those lands within the boundaries of the three study areas.

2. All sites on or within one mile of BLM-administered lands were plotted on the base maps and locational errors of previously plotted sites were corrected. The color coding of the site numbers placed on the maps indicate the institution where the site information was obtained.

3. Because it is not possible to determine when specific site records were filed at San Diego State University, site forms for which there was no corresponding site record in the BLM files were copied. At the Museum of Man all site records filed after December 1974 were obtained. Since information has been filed at San Diego State University, few additional sites were added to the site base map as a result of the record search at Anza-Borrego Desert State Park. Cuyamaca Rancho State Park did not have any site records for areas outside of the State Park boundaries. Both institutions, however, do have unpublished manuscripts that apply to the prehistory and history of San Diego County. The San Diego County Integrated Planning Office was contacted for site information from the San Diego County Environmental Development Agency, Historic Site Survey (1973). All of these sites, irrespective of their location to BLM-administered lands, were plotted on the site base maps. A letter was sent to the State Historic Preservation Office requesting information on sites that were considered to be eligible for inclusion on the National Register of Historic places.

The location or expected location of Indian villages was also plotted on BLM site base maps. In order to protect the sites, the village locations are not included in this report. Most of the information on Indian villages was obtained from Richard arrico, who has been compiling the information over the past few years. Additional information was obtained from early survey plat maps and Sutton (1965). A list of the villages is provided in Appendix F. The location of sites identified by local Native Americans was also placed on the base maps.

Other sources consulted for site information include:

The National Register of Historic Places

The Historic American Buildings Survey

Registered California State Historic Landmarks

California Inventory of Historic Resources

Overview

In general, the collection of the data presented in the Overview involved a review of published and unpublished literature pertinent to the prehistory and history of the study areas. Additional information was received through a contact program conducted throughout the course of the study. (See Appendix L, Agency and Individual Contacts.) Interviews, some of which were taped, were also conducted.

The environmental background data presented in the report was obtained from both published and unpublished sources, including articles, dissertations, theses and maps. The culture history and ethnographic background portions of the report were also compiled primarily from published and unpublished literature. Information obtained as a result of contacts (i.e., letters, telephone conversations, etc.) or interviews was incorporated where appropriate. For these sections of the report, the data collection was not restricted to information on the three study areas. Literature relevant to the prehistory of San Diego County was reviewed. An emphasis, however, was placed on collecting data that would facilitate studies that may be conducted during a Class II inventory. It is for this reason, for example, the ethnographic literature was thoroughly reviewed for information on the material culture of the Native American groups represented in and around the study areas.

Information on previous research was obtained from both published and unpublished articles, manuscripts, etc. The current research information resulted from the literature search and telephone conversations with individuals who are presently working in the San Diego County area.

The history of the San Diego County area was compiled from data obtained from a research and review of published and unpublished literature, including articles, books, manuscripts, interviews, maps and documents. A number of local, knowledgeable individuals were also contacted, as were representatives of local historical societies.

In order to obtain information on Native American values and the location of sites of "special religious or social significance," letters were sent to the spokesperson of each reservation in or adjacent to the three study areas. A letter requesting information on sites of "special sacred or social importance" within the study area was also sent to the Native American Heritage Commission. A follow up letter was sent to each spokesperson who did not respond to the first letter; and finally, those individuals who did not contact us were contacted by telephone. As a result of these contacts, representatives from several reservations were consulted in person. Richard Carrico (1978) told us about a knowledgeable Native American, Thomas Lucas, who is familiar with the Laguna Mountain area. The San Diego Historical Society gave us permission to listen to two recordings of interviews with Lucas, with the stipulation that the information we cited be approved by the San Diego Historical Society or Lucas. We later interviewed Mr. Lucas.

When permission was given, the meetings with Native Americans were recorded on tape. These recordings are not considered public until they have been reviewed by the individuals consulted and approval has been given to make the interviews public. None of the site location information is available for public review.

The information on the location and nature of cultural resource collections was obtained by a review of the literature and sending letters to a number of historical societies, museums, local environmental firms and libraries requesting such information on the nature of their collections relevant to the prehistory and history of the study areas.

Scheduling and Participants

The BLM contract was awarded to Wirth Associates at the end of March 1978. Contacts with BLM regarding the contract began in early April. Data collection also began in April although most data was collected during the months of May and June. Report preparation began at the end of June and continued through July, as did some data collection.

A number of individuals at Wirth Associates participated in the collection of data and the preparation of the report. The individuals primarily responsible of specific sections of the Overview are listed below. Christopher White acted as principal investigator, Jan Townsend was project coordinator. David Burkenroad, the history consultant, collected all of the historical data and prepared those sections of the report that present historical information.

The Environmental Background and Previous Research sections of the report were prepared by Debra Dominici. Cindy Smith wrote the Culture History. A number of archaeological consultants contributed to the compilation of the Ethnographic Background section: Debra Dominici prepared the section on Territories; Lisa Capper wrote the Socio-Political and Religious Organization and Material Culture sections; Wendy Waldron compiled the section on Subsistence and Settlement Patterns and Christina Smith researched the section on Trade. Nancy Farrell compiled the Ethnobotany and Ethnozoology appendices.

Dr. Clyde Woods and Jan Townsend conducted the Native American contacts. Lance Schulte prepared the preliminary maps and final graphics were prepared by Wirth Associates in Phoenix, Arizona.

Difficulties Encountered

The major problems encountered in preparing an overview of this type are not uncommon to most studies. For example, a less than $10,000 contract is not adequate funding for an overview of the history and prehistory of San Diego County. In one sense there were too many published and unpublished sources to review, which has not been a problem of previous Class I overviews; and at the same time, these sources are widely scattered making access to them difficult. Although an insignificant problem, some individuals contacted were reluctant to provide information to the BLM.

A note should be also made on the attempt to obtain information about the locations of archival and artifact collections. One goal of the Overview is to provide enough information in the report so that researchers would know which institutions to contact for particular types of data (e.g., photographs of San Diego County, unpublished manuscripts, artifact collections, etc.). For this reason, a form letter

sent to local institutions and institutions located around the United States. One individual at a well known public anthropological institution was incensed that we had not addressed the letter to him personally and that we should ask for that type of information. Another interesting outcome of these contacts is that, with the exception of Archaeological Systems Management, none of the local environmental consulting firms retaining archaeologists responded. Most institutions, however, did respond favorably, particularly those located outside of San Diego County.

Although the Native American contact program added a valuable dimension to the study, some problems were encountered. These are noted below because other institutions conducting similar studies may also be faced with them. The major problem was the lack of sufficient money and time to conduct the level of study that we eventually decided was desirable for a Class I Overview.

When the proposal was written, it was anticipated that if letters were sent to representatives of the local bands, we would receive responses. Interviews were not anticipated. In addition, the letter from the Native American Heritage Commission listing over 50 Native Americans to contact was not expected, although it was appreciated. At the beginning of July, which was the last month of the project, we had only received two responses as a result of the contacts by letter. The decision was made to follow through with the contacts that had been initiated through letters by contacting those who had not responded. This was not part of the contract. Given the expense and particularly the amount of time to complete the Overview, it was determined that we could not contact all of the individuals on the list provided by the Native American Heritage Commission.

The response was much more favorable when telephone contacts were initiated. Some individuals provided information on the phone and others referred us to knowledgeable individuals. Some refused to provide information. Although the telephone contacts were productive, they also took a lot of time because it was often difficult to reach the individuals. As a result of telephone contacts, several interviews were set up. When the interviews began, it became obvious that the maps that were sent out were inadequate for the information requested and many people did not understand the letter, map or purpose of contacting them since the reservations are not BLM-administered lands. The phrases "places or types of places that are of special concern", used in our letters, and "places of special religious or social significance" are unclear. When we asked for information on those areas that should be protected, locations and descriptions were given. Most of the locations are not on BLM-administered lands. The only protection BLM can afford these sites is to avoid any actions that might indirectly affect them. Many of the sites identified are on state lands. With the permission of the informants, this site location information is being forwarded to appropriate agencys. The Native American Heritage Commission will also receive the information.

In conclusion, we did not anticipate the time, expense, or level of effort that would be involved in making the Native American contacts. Although it was not called for in the contract, we felt the most appropriate course of action was to personally talk to as many individuals as possible, given the time involved. On future projects, the original letter will be treated as a way of opening up communication rather than anything more concrete. By making personal contacts, we were able to gather information that could not have been obtained through correspondence.

PLEISTOCENE AND RECENT ENVIRONMENTS OF SAN DIEGO COUNTY

To gain an understanding of prehistoric and historic (See History Themes and Lifeways) human use and occupation of the study area, it is important to discuss past and present environmental factors. By developing models and ecological relationships for the "effective" environment (that part of the total environment with which people interact), biases of the "extractive system" refers to resource utilization and the accompanying technology. Changes in ecological relationships compared with changes in population density and distribution through time, enables predictions of cultural change to be made (i.e. Kowta 1969; Advasio and Fry 1972).

A brief discussion of basic trends in the reconstructed past environment will be presented before describing in detail those specific factors utilized for such interpretations. Antevs' past glacial climatic sequence has been supported by archaeological (Lenning 1963), geological (Hurst 1953) and ecological (Cottam et.al. 1959) data. Although this scheme is generally accepted, Aschmann (1958), Jennings (1957, 1964), Martin (1963) and Bryan and Gruhn (1964) have regarded the temperature sequence of Antevs "as either wrong or in any case too simple for use as a standard classification of postglacial time in the Desert West" (Baumhoff and Heizer 1965: 697). Therefore, the following discussion will incorporate the postulations of all previous researchers with emphasis on the most recent accepted sequence.

Basically, the instability of the environment over the last 10,000 years could be considered no more dramatic that the ecological variation encountered by Great Basin inhabitants within a single year (Mehringer nd:28). Prior to 10,000 years ago the Pleistocene environment can best be described by Mehringer's summary (nd:28).

> During the last pluvial many basins, now dry and salt encrusted, were fed to overflowing by cool waters and joined by great rivers. As woodlands descended to treeless deserts, glaciers curved beds in show-capped mountains. Herds of camels, horses, and mammoths grazed the stepps and fertile marshes. And then within 2,000 years (12,000 - 10,000 BP) lakes shrank, rivers ceased to flow and springs began to dry. Plants and animals began the long retreat northward and to higher elevations and man witnessed the demise of the Pleistocene mega fauna. By comparison, all subsequent environmental changes have been minor.

The trend towards aridity prevailed in the Great Basin with short term reversals occuring just prior to 10,000 BP and at 8,000 BP. Since 7,500 BP conditions like those of the present have prevailed; interupted only with moist periods at 6000 BP, 1500 BP and 600 BP.

Basic climatic trends have implications for the study of the Paleo-Indian and Desert Culture Complexes. The Paleo-Indians, who are sporadically represented in the study area, favored environments around late Pleistocene lakes. The Desert Culture (Desert/Western Archaic), initially appearing around 11,000 BP, is characteristic of regional and subregional adaptations employing extractive systems on diverse microenvironments. Labeled as "Broad Spectrum Resource Utilization" (Flannery

1969), the extractive systems of the Desert Cultures allowed the broadening of the subsistence base. Further discussion of this topic can be found in the "An Equilibrium Model for Cultural Change in the Great Basin" (Adovasio and Fry, 1972).

RECENT ENVIRONMENT

Ecological differences within San Diego County are caused in part by geological and physiographic factors, and climatic variability that results from interactions between the general circulation of the atomosphere and the regional topography. Discussed briefly in the following sections are 13 major ecosystems (microenvironments). Classified according to vegetation, the principle divisions are; Coastal Strand, Salt Marsh, Coastal sage, Chaparral, Fresh Water Marsh, Valley Grasslands, Oak Woodland, Coniferous Forest, Riparial Woodland, Desert Transition, Desert Wash, Creosote Bush, and Wash-Bush Transition (Warren, 1964; Munz, 1974). The major fauna and flora species of these regional ecosystems which were subject to human exploitation can be found in the Ethnobotanical and Ethnozoological sections (see Appendices D and E).

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The majority of the San Diego County physiographic region consists of Peninsular Ranges with a small portion of Low Desert. A total of seven plant communities are found in these two geological provinces. Six plant communities are found within the Coastal Zone and Alluvial Valleys of the geological "Coastal Province" which makes up the rest of San Diego County. These communities, comprised of associated flora and fauna, combined with specific climatic, edaphic, and hydrologic factors, can be considered microenvironments. The Soil Conservation Service and Forest Service have county maps which delineate each of the plant communities mentioned in the following sections. Also compiled by these services are detailed county soil maps imposed on aerial 7.5' quad maps and information collected by the Soil Survey.

Coastal Zone

In the Coastal Zone (historically reported as extending a half day's journey inland from the coast), there exist the "Coastal Strand," "Salt Marsh," "Coastal Sage Scrub" and "Chaparral" plant communities (Aschmann 1959:50-1). It has been postulated (Warren 1964:72) that a small population exploited these microenvironments seasonally as a part of their annual round.

Composed of coastal dunes and sandy beaches, the Coastal Strand plant community supports "low or prostrate growth and often succulents" due to low rainfall and high hummidity (Warren 1964). North of Mission Bay, this community exists only at mouths of streams and rivers. A modified form of Coastal Strand did appear along the tops and talus of sea cliffs. A disadvantage of this modified version is the lack of fresh water.

Located at the mouths of Coastal Valleys, the Salt Marsh Community contains halophytic species (plants that grow in salty soils). Ranging from less than a mile to four miles inland, this community provides no available food for exploitation but did provide salt (Munz 1969; Aschmann 1959).

Considered an improverished chaparral, the Coastal Sage Scrub community was found on dry, rocky and gravelly slopes below 3000 feet. Semi-shrub plants, one to five feet tall, constituted the major life form on these ancient sea terraces. Father Crespi's accounts of his journey in 1769, reported a wider distribution of grasses in these areas, with occasional rosemary and other shrubs. A large number of game animals occur in this community.

The Chaparral Community, composed of small trees and evergreen shrubs, appears at 1000 to 4000 feet, on the west slope of the Peninsular Range. Live oak and grasses, yellow pine and big cone spruce appearing in stands, are found in moist localities. Chamise, the most abundant species in this community and scrub oak were both important to the aboriginal population. The Torrey Pine, a prolific annual seeder, was also a potentially exploited species. Numerous game animals, such as rabbits, hares, antelope, squirrels, deer, bear and birds abounded in stands of this community.

Alluvial Valleys and Hills

Two plant communities compose the Alluvial Valley and Included Hills ecological zone; the "Fresh Water Marsh" and "Valley Grassland." This ecological zone was close enough to the ocean for exploit of sea resources but contains a more productive plant community and fresh water. Located adjacent to river bottom lagoons and near the coast, the Fresh Water Marsh Community consists mainly of reeds and rushes. Usually inland of salty areas, these areas are regularly flooded by fresh waters. The plant community is widely scattered and varies with local topography and drainage conditions. Crespi (1927) reported that willows and poplars bordered the grasses and marshes.

The Valley Grassland Community is a subtropical, open and treeless grassland. Composed of bunch grasses (i.e., *Stipa pulchra*, *S. cerna*, *Arislidae divoricata*), this community appears at a slightly higher elevation than fresh water marsh.

The San Diego Bay and Mission Bays are local exceptions to the coastal zone. Being sizable embayments in which simple water crafts could be used in the exploitation of the maritime economy, these microenvironments were very productive. In 1692 Vizcaino reported good water, many fish and an abundant range of land animals in the bay areas (Engelhardt 1920). Numerous villages were located along the bays and the areas seemed to be densely populated (Warren 1964).

Peninsular Ranges

Four major plant communities compose the Peninsular Range ecological zone; "Oak Woodland," "Coniferous Forest," "Riparian Woodland," and "Pinyon-Juniper Woodland" (Munz 1974). A brief discussion of these communities is provided. For a further discussion of the specific components see the "Econogical Resources" section in *Phase One Regional Studies Sundesert Nuclear Project Transmission System Environmental Study* (Copper 1975) and *A California Flora* (Munz 1974).

Dominated by shrubby vegetation, the "Oak Woodland" community appears on the coastal slopes of mountains and on the coastal mesas west of the desert and below the coniferous forest zone. In the more moist areas within these locales, stands of trees appear with occasional willows and cottonwoods growing in standing water. Stands of oak commonly occur with associated sycamore in the drier valleys. This community gives way to coniferous forests at an elevation of 4,000 to 5,000 feet.

In the mountains, above the 4,000 foot elevation, "Coniferous Forests" appear within the study area. Bean (1974:28) has called this area the "Transitional" life zone. Dominated by a variety of coniferous trees, the densest forests occur above the 5,000 foot elevation. The dominant species at the lower elevations are Jeffrey pine, along with Coulter and ponderosa pine. Distinguished by Bean (1974:28) as the "Canadian Hudsonian" life area, the higher regions support more abundant white fir and sugar pine stands which are dominant. Rocky slopes with southern exposures within the forested areas support chaparral vegetation or drought resistant oaks. Grassy meadows appear in the larger areas of coniferous forests, due to soil differences and to drainage effects.

Appearing in moist to wet soils, the Riparian Woodland consists of forest or woodland vegetation. Riparian vegetation usually occurs along rivers and streams flowing toward the Pacific Ocean, but is also present where soil moisture is high and tree growth possible. The dominant species of this community are willow, cottonwood and sycamore. Shrubs and herbs also appear in the narrow and frequently discontinuous bands of trees following streams courses. Scattered in the higher elevations are black cottonwood and box elder with white elder predominating.

One of the most important plant communities of the arid southwestern United States, the Pinyon-Juniper Woodland is only sparingly represented in the study area. In Mukats People this community and chaparral are labeled the "Upper Sonoran" life zone (Bean 1972:27). Two species of Pinyon and one species of juniper are widely distributed throughout this plant community. Stands of pinyon pine are recorded as a Pinyon-Juniper Woodland but stands exclusively composed of juniper are included with the Desert Transition community. Being an open vegetation type and considered as a sub-type of the Desert Transition, the Pinyon-Juniper community supports long life species.

The Desert Transition environmental zone, not generally recognized, supports a plant community which is basically desert like, although it does differ significantly from the generally hotter desert to the east. Bean (1972:25-26) calls this the "Lower Sonoran" life zone. Both pinyon and juniper are present in this microenvironment. However, the wide dispersion of juniper and the spotty distribution of pinyon, inhibit the classification of this area as a Pinyon-Juniper zone. As the most diverse of all the desert vegetation ecosystems, the Desert Transition supports an abundant array of species. An intermingling of chaparral and Low Elevation Desert vegetation appears with characteristic species (i.e., Beargrass, Mojave yucca, agave desert apricot, bernardia, turpentine broom, etc.). This open community of low shrubs differs only from the Low Desert in that vegetation seems to be more lush, with plants generally taller and more robust.

On the county vegetational map prepared by Thomas Oberbauer, three additional major desert vegetational zones are listed; "Desert Wash," "Creosote Bush," and a "transitional area." These communities are subdivisions of the area that has been designated as the "Desert Scrub" plant community (Copper 1975:48)

The Desert Scrub plant community stretches from the base of the Peninsular Ranges to the Arizona border. Dominated by shrubs of short stature such as creosote and various cacti, the open community has a large proportion of bare ground during the rainless seasons. As is characteristic of desert plants which endure water shortages, the cacti survive by storing up water (Walter and Stradelman, 1974). Perhaps capable of surviving a century or more, Creosote bush commonly reaches the age of 50 to 60 years (Wallace and Romney 1972).

Variations in desert vegetation are due to availability of water, which in part is due to differences in soils and landscape. Desert Palm Oases, associated with a water source very near the surface are a unique and significant desert vegetation. Usually only a few acres in extent, the larger oases are found adjacent to drainages.

Another area in which more moist conditions occur, are drainage channels. This zone is generally treated as a distinct vegetation community (e.g., "Desert Dry Wash Woodland" by Cheatham and Haller 1975). The size of the species ranges between the desert shrubs and oases palms. "In the western portions of the desert area, smoke tree is a dominant and significant wash species with desert willow, cat-claw, ironwood, mesquite and several other species of secondary importance" (Copper 1975:50).

ENVIRONMENTAL INDICATORS

Several kinds of evidence have been utilized in the development of the previously discussed environmental reconstruction and the present environment. In the broadest sense, they are geological, biological, and archaeological in nature. Lake level fluctuations, glaciations, volcanic and tectonic activity, soils, sediments and erosion, and eolian activity are all considered geological evidence (Mehringer nd). Biological records of fossil plants and animals, dendroclimatological information and some biogeographic considerations have all been utilized. Archaeological information utilized as evidence for environmental reconstruction include: site locations on Pluvial Lakes, coprolite samples, stratigraphic evidence of cultural change, etc.

Pollen

The first factors considered for the past environmental reconstruction are pollen records. There is an abundant amount of fossil pollen found in a variety of sediments (e.g., playa-like mud, alluvium, cave earth, archaeological trash and coprolites). Based on pollen-stratigraphic evidence that was carbon dated, a change to warm-dry post-glacial climates appears to have occurred rather rapidly around 12,000 BP (Martin and Mehringer 1965:439). Martin and Mehringer (1965) state that evidence

for a drought 10,000 to 7,300 years ago (e.g., a reduction in tree pollen counts) is scarce and that intense arroyo cutting and calichification may reflect an intensified summer monsoon season. During this period, however, arboreal pollen became less important and grassland pollen was most significant by 1380 BP. Antevs (1962) feels this is a reflection of the drought conditions. Warren (1964:88) states that vegetation during this time was subjected to disturbing forces which "were primarily fire, of both human and nonhuman origin, and drought."

During the period of increased population, 8,000 to 6,000 years ago (beginning of the La Jollan period), a "Fire Ecology" was incorporated (Warren 1964:88-9). The least adapted vegetation to the Fire Environment were local coniferous and broad sclerophyll (oak) forests. This environmental situation stimulated crown sprouting and germination of some species. Fire assures the regeneration of chaparral. Coastal sage scrub and grasses regenerated less rapidly than chaparral after a fire. The Grassland vegetational zone, containing perennial herbs, are the least disturbed under these conditions due to substratum factors. Substratum is correlated to the water content of plants. In rocky-sandy soil, roots grow deeply in search for deep water sources. Shallow rooted vegetation grows in clay (argillaceous) soil from which water evaporates quickly.

Continuing the pollen sequence, a decrease in grassland pollens and an increase in desert pollens occurred between 7380 and 6250 BP which may reflect a drought period. At 6250 BP desert pollens decreased to the level of importance they held prior to 3200 BP when the desert reasserts itself. After this period desert pollen decreases in the study area.

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Water Temperatures

Ocean water temperatures have been utilized as reflections of past environment (Hubbs et al. 1960-1962; Shumway et al. 1961). The evidence basically agrees with the projected past environment based on pollen. From 9500 to 7500 BP the climate was drier than 12,000 BP but more moist than today. Between 7500 BP and 7600 BP a prolonged mild climate seems to be indicated. The climate became considerably cooler than present from 1600 BP to 600 BP, when a warming trend prevailed (Warren 1964:92).

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Rainfall

Meteorological investigations state that present rainfall is controlled by an area of high atmospheric pressure in the eastern Pacific. In the summer the anticyclone blocks cyclonic storms which account s for the scarce summer rains, allowing cyclonic storms to reach the coast and bring rain.

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During the winter, the high pressure area is weaker and located farther south or is totally absent; thus during the Pleistocene, belts of pressure were forced south by large ice sheets. A longer winter resulted with an accompanying rainy season (Antevs 1952:23-6).

Geology

The geological history of the study area can be characterized by a considerable amount of erosion, evidenced by large streams and steep-sided canyons. Coastal valleys are composed of deep, loose alluvium with abundant ground water surrounded by steep broken slopes above "hardpan" soils. Stratigraphic evidence in the form of udaphic (relating to soil) diversity can shed light on the past and the present environment. The following section summarizes Warren's (1964) discussion on these factors.

The coastal zone is divided into two regions, north and south of the San Diego River. The substrata north of the river is comprised of Eocene marine deposits; Poway Conglomerate, Rose Canyon Shale, and Del Mar and Torrey Sands. The Poway conglomerate is made up of cross bedded boulders and cobbles. andesite basalt and basalt porphyry, with lenses of sandstone. Shale and silty mudstones appear in the Rose Canyon Shale with a few limestone beds. Minor amounts of conglomerates also appear in this strata.

South of the San Diego River, the Sweitzer Formation caps most of the mesas. A reddish brown conglomerate and pebbly sandstone, the Sweitzer Formation has a maximum thickness of twenty feet. The formation is a late Pliocene, early Pleistocene deposit, resting unconformably on the San Diego Formation. A Pliocene deposit, the San Diego Formation, rests on Rose Canyon Shale and Poway Conglomerates.

At many locales along the coast, terrace material is composed of pleistocene deposits. Most of the valley bottoms, delta flats and bay flats are agraded by recent alluvium. The sand ridges that are found on the Linda Vista or Torrey Pines Mesa are derived from the Sweitzer Formation.

There are three major soil types in the Coastal Province (Holmes and Pendleton 1918): 1) Residual soils weathering from consolidated rock 2) solid derived from old unconsolidated rock, and 3) recent valley fill.

The "Ecological Resources" section in the Phase One Regional Studies Sundesert Nuclear Project Transmission System Environmental Study (Cooper 1975) contains descriptions concerning the Peninsular Ranges and Desert physiographic areas. Included are brief sections concerning geological factors based on Oakeshott (1971). Characterized by steep, elongated ranges and valleys, the Peninsular Ranges lie near the coast and extend eastward nearly to the San Diego County line. Trending northwestward, the northern end of the province includes the Los Angeles Basin; while to the south the Peninsular Ranges form the backbone of Baja California for about 750 miles. Ranging in altitude from below 7000 feet to 10,831 feet the eastern face of the Range drops abruptly to the desert valley. Descending more gradually into the Coastal Province, the western slopes become broad marine terraces. The majority of streams in the Peninsular Ranges are not large and are usually intermittent, flowing westward. The largest Peninsular Range streams in the project area are the Santa Margarita, San Luis Rey, Sweetwater River, and San Diego Rivers. Being largely composed of granitic intrusions, the derived soils of this province "tend

to be coarse, of low water holding capacity and low inherent fertility, and moderately erodible." (Copper 1975:8) A detailed description of the present soils in these areas can be obtained from the Soil Conservation Department, located in Riverside, California.

The desert area of San Diego County is a southwestern extension of the Colorado Desert. Copper (1975) in the Phase One Regional Studies Sundesert Nuclear Project Transmission System Environmental Study called this physiographic area the "Salton Trough."

> The Salton Trough is a land-locked basin lying mostly below sea level. It is separated from the Gulf of California only by a low divide of sediments from the Colorado River Delta. The Salton Sea was formed in 1905-1906 when the Colorado River burst through its dikes and poured into the basin to an elevation of about 200 feet below sea level. (Fine grained to sandy alluvial soils covered this region.) The eastern boundary is the extensive Algodones Dunes (Copper 1975:8).

Unlike the other provinces the drainage is interior with streams flowing into inland valleys and ending in saline lakes and playas.

David Weide (1976:1-20) has written a detailed section of the "Regional Environmental History of the Yuha Desert." Focusing on three aspects of special interest to archaeologists, this report presents useful data on the desert region of San Diego County.

SUMMARY

At the end of the Pluvial, 12,000 years ago, a woodland environment consisting of oaks and conifers dominated the study area. Increasing aridity (10,000 - 7,380 BP), combined with forces of man and environment (i.e., fire), hastened the replacement of conifers and oaks by grasses, chaparral and coastal sage scrub (Warren 1964:103-4). Coniferous and woodland communities were limited to higher elevations which were more moist, in the Peninsular Ranges.

From 7,380 - 6,250 BP, there was an increase of desert pollen reflecting a drier-warmer climate. Ocean water temperature also reflects a prolonged mild climate during this time. From this period on, short term reversals occurring at 4,000 - 3,000 BP and at 1600 - 600 BP are exceptions to an otherwise stable climatic sequence that had fluctuations no more dramatic than those occurring with a year.

Geological factors also influence the environment, especially in the desert regions. Periodic changes in the course of the Colorado River have caused spillovers in the Salton Sink thus forming fresh water lakes. These factors affect the density and distribution of aboriginal population.

PREVIOUS RESEARCH

The term "research" encompasses many different topics, ranging from individual curiousity to long term scientific investigations guided by formulated research designs. The broad classification of literature that can be labeled previous "research" in San Diego County is no exception to this ambiguous range. Because cultural resources are not renewable and are diminishing at an extraordinary rate, any documentation of past phenomena is potential data. Previous research in San Diego County has been divided (basically chronologically) into four categories. The framework provides a temporal perspective. The categories developed parallel basic anthropologic research trends from its inception in America to the present. Briefly the categories encompass: (1) early land expeditions and mission reports (1800s - 1930), (2) pioneering research, (3) precontemporary research (1930 - 1960) and (4) contemporary research (1960 - present).

The most comprehensive research or examples of types of research in each of these categories will be summarized in this section. A complete annotated bibliography is provided at the conclusion of the Overview.

EXPEDITION ACCOUNTS AND MISSION REPORTS

Spanish land expeditions, venturing into what is now Western United States, began as early as 1539. Many explorers documented their travels with written descriptions of the aboriginal populations. Allowing for biases which tended to overemphasize the exotic, these reports contain a large amount of useful information. Observations by Cabrillo in 1542 and Vizcaino in 1602 are among the initial historical sources. Anza's California Expeditions, translated by H. E. Bolton (1930) and the record of Father Francisco Garces' travels translated by J. Galvin (1965), are both reports of expeditions during 1774-1775, which exemplify this category. Crespi's (1927) written accounts of his journey north from San Diego Bay in 1769 provide environmental description.

During the late eighteenth and early nineteenth centuries several expeditions were made into inland San Diego County. A diary by Jose Velasquez (1783) describes the route taken by Fages, who crossed the Peninsula Ranges in 1782. Father Juan Mariner explored the area between San Diego and the Volcan Mountains in 1795, and recorded Native American villages. A translation of his diary is found in Hill (1927:187-191); the original is at the Santa Barbara Mission Archives. The Spanish explorer Juan de Grijalva, in 1795 wrote observations describing the Cupeno (Hill 1927). In 1821, Father Payeras and Jose Sanchez made a trip through the county from San Diego to San Gabriel (present-day Los Angeles); Sanchez' diary (1821) is available at the Bancoft Library. Documenting his battalion's journey through the west, George Cooke's (1849) official journal provides similar categorical information. Bean and Mason (1962) have published the diaries and accounts of the Romero's 1820s expedition in Arizona and California.

Mission reports also provide pertinent data and have been utilized by ethnographers such as A. L. Kroeber (1908). Zephyrn Engelhardt (1921, 1920) has written about the San Luis Rey and the San Diego missions, providing data which has been incorporated

into contemporary research. G. Boscana (1846) and Tac (1930, 1952) have written historical accounts of the Luiseno at the San Juan mission.

PIONEERING RESEARCH (1800-1930)

Prior to the turn of the century, articles appeared covering broad research topics such as anthropometric observations by F. Boas (1896), mission Indians by F. Foote (1890), linguistics by A. S. Gatschet (1879), material culture by P. Schumacher (1879) and California Indians in general by E. H. Howard (1889).

Ethnographic

Indicative of the type of research being done around the turn of the century, the University of California Publications in American Archaeology and Ethnology contains many articles concerning southern California Indians. Individuals such as C. DuBois (1908), A. L. Kroeber (1925), E. W. Gifford (1918), L. Hooper (1920), P. S. Sparkman (1908), L. Spier (1923), W. D. Strong (1929) and T. T. Waterman (1910) prepared reports in this series. All of the reports provided detailed ethnographic information useful to the pre-historian and historian alike (e.g., Gifford reporting on the California kinship, Kroeber's (1922) "Elements of Culture", "The Religion of the Luiseno Indians" reported by De Bois, etc.). The American Anthropologist also published articles concerning southern California aborigines during this period. (e.g., E. H. Howard 1898; A. W. North 1908; H. N. Rust 1906; etc.).

The fifteenth volume of the North American Indian (Curtis 1907) deals with southern California Indians. Documented with photographs, Curtis' work provides outstanding visual detail on the material culture of the various aboriginal groups in the study area and the people themselves. Curtis also collected information on the culture and myths of the Luiseno, Cahuilla and Diegueno Indians and prepared word lists for all Native American groups represented in the San Diego area. Kroeber (1925) prepared an overview of the Indian groups of California including the Cahuilla, Luiseno, Cupeno and Diegueno.

During the 1920s, topics ranging from the specific (e.g., shaman's cache) to broad regional topics (e.g., Davis: 1927, "The Indians of Southern California") were research. G. G. Heye (1919, 1927), J. W. Mykrantz (1927) and T. T. Waterman (1921) wrote ethnographic articles which appeared in Indian Notes and Monographs published by the New York Museum of the American Indian, Heye Foundation.

A number of individuals during the early 1900s researched individual Indian groups in San Diego County. Focusing on religion and folklore, C. G. DuBois (1901, 1903, 1904, 1905, 1907, 1908a, 1908b) conducted ethnographic fieldwork among the Diegueno and Luiseno. T. T. Waterman also published some brief papers on the Diegueno (1910, 1923). Published in Indian Notes and Monographs, E. H. Davis (1919, 1921, 1928) wrote articles that discussed several aspects of Diegueno ceremonies. Written in the 1930s, M. H. Lee's children stories focus on specific aspects of Diegueno culture (e.g. the gathering of acorns). These stories are currently being prepared for a second edition by the San Diego Museum of Man.

P. Faye (1928) reported on the Christmas fiestas of the Cupeno in America Anthropologist. Earlier articles written by C. F. Lummis (1902) and G. Wallace (1902) describe the exiles of Cupa. Strong (1929) wrote an account of the social and religious organization of the Cupeno and prepared geneology lists and a list of sites owned by the various Cupeno clans.

The earliest ethnographic study among the Luiseno was conducted by Henshaw (1972) in 1884. (Bean and Shipek 1978:562) G. F. James (1902) described a Soboba origin myth and DuBois (1908) wrote of the religion of the Luiseno. Works of Sparkman (1905, 1908a, 1908b) provide the most comprehensive early ethnographic accounts on the culture of the Luiseno. Kroeber (1906, 1908d, 1909b, 1917) described selected aspects of Luiseno culture, including the kinship structure.

Focusing on the Cahuilla, David Prescott Barrows (1900) described plant uses, material culture and settlement patterns. After the pioneering effort, Kroeber (1908) prepared an ethnography of the Cahuilla, as did Hooper (1920). Although general information regarding the culture of the Cahuilla can be obtained from articles prepared by Kroeber (1908) and Hooper (1920), these studies deal primarily with the Desert Cahuilla to the north and east of the San Diego County. Strong (1929) in Aboriginal Society in Southern California described the Mountain, Pass and Desert Cahuilla separately. He collected detailed information on territory, social, political and religious organization and ceremonies for all three Cahuilla subdivisions.

Archaeological

Archaeological research was initiated in the 1870s with sporadic digging by individuals who were searching for artifacts suitable for museums (Heizer 1978:12). This data and other information gained prior to 1900 is summarized by Thomas (1898) and Yates (1900).

Initially on the staff of the Museum of Man and later its director, Malcolm Rogers researched the prehistory of southern California. Intrigued by the archaeological evidence found during his wanderings, Malcolm Rogers postulated about early man and did consequent research between the years of 1919 and the late 1930s. Malcolm Roger's detailed notes are housed in the Museum of Man, along with the artifacts he collected. Richard Pourade edited the majority of these notes and compiled them in Ancient Hunters of the Far West (1966).

The earliest archaeological sequence for San Diego County is presented by Rogers in 1929. Three cultures, the "shell midden" people, the "scraper-makers" and the historic Diegueno are described (Rogers 1929). A later article by Rogers (1945) outlines the Yuman (late prehistoric) culture complex. In addition to providing a overview of the origin, development and diffusion of the Yuman culture in the southwest, Rogers includes some discussion of the San Dieguito, La Jollan and Yuman phases in the San Diego area.

Historic

During the 1880s, several important historical works were published. In 1884, Hubert Howe Bancroft published the first volume of his seven volume History of California. A team of researchers compiled it from numerous documents, many of which were later destroyed in the San Francisco Earthquake. Bancroft's History describes the primary events associated with the early western occupation of California. The missions and ranches of San Diego County are described in detail. Even before Bancroft's first volume appeared, Wallace W. Elliott (1883) produced The History of San Bernardino and San Diego Counties, one of the many promotional descriptions of southern California. His work is valuable because it describes the early inland county farming communities. Other such promotional works describing the inland county include D. Gunn's Picturesque San Diego (1887) and T. S. Van Dyke's The City and County of San Diego (1888).

During the 1920s Zephyrin Engelhardt published his histories of the San Diego and San Luis Rey missions (1920 and 1921). Although dated and proclerical, they contain factural information concerning the development of the missions. In 1927, Joseph Hill published the History of Warner's Ranch and Its Environs, which traced the history of this historically important inland county ranch.

INTERMEDIATE RESEARCH ERA (1930-1960)

Ethnographic

A broad range of ethnographic material was collected during this time period. The most pertinent will be delineated in this section.

The notes on San Diego County Indians (Hayes 1934), edited by Arthur Woodward from a manuscript of Judge B. Hayes, can be classified as a reference source. Malcolm Rogers (1936) can be cited for his ethnographic research on Yuman pottery making. Written at the same time, Julian H. Steward's (1938) article for the Smithsonian, summarizes an ethnological reconnaissance among the desert Shoshone and has general application to the Southern California Shosonean groups in the study areas. Philip Drucker's (1937, 1941) highly informative cultural element distribution lists was also prepared at this time.

In 1943, S. F. Cook reiterated the conflict between the California Indians and the white populations. Also published in the 1940s is John W. Hilton (1949) report on Cahuilla "Black Magic".

During the 1950s Southern Diegueno use and knowledge of lithic meterials was investigated by W. Hohenthal (1950), and Florence Shipek published an article on "Diegueno Pots" (1951). Raymond White conducted ethnographic research among the Luiseno and during the 1950s prepared two reports (1953, 1957) on the Luiseno. "The Luiseno Theory of Knowledge" (White 1957) is also included in this category.

Archaeological

Pleistocene Man at San Diego (Carter 1957) presents, within the framework of geology, geomorphology, climatic change, soils and archaeology, the case for lower Paleolithic man in San Diego. The "artifacts" from Carter's Texas Street site, rejected by many archaeologists as natural rather than man-made, have been the object of considerable controversy. The debate goes on, due to the discovery of a similar assemblage at Buchanan Canyon, one mile west of the Texas Street site (Minshall 1976:97).

B. E. McCown's (1955) archaeological survey of San Vicente Lake Bed is representative of salvage archaeology. Data from the San Vicente Lake Bed project and from the Fallbrook site investigated by McCown, combined with Meighan's investigations of SDi 132, resulted in Meighan's definition of the San Luis Rey I and II complexes (1954). Research in north-eastern San Diego County (Valley Center, Pala, Pauma, Rincon) by D. L. True (1958) resulted in the definition of the Pauma Complex.

As a student at the University of California at Berkeley, Adan E. Treganza published his first paper (1942) which summarized his work in the desert of southern California and Baja California. During his seletive survey he recorded both San Dieguito and Yuman sites. Treganza (1945, 1947, 1947b) reports hypothesize about settlement patterns based on seasonal subsistence. Robert F. Heizer and A. E. Treganza (1944) published an article on the mines and quarries of the California Indians, which provides valuable information on location of possible sources of raw materials used by the Indians in the study areas.

W. J. Wallace (1955) presents a regional sequence for the archaeology of coastal southern California. Wallace's sequence consists of four horizons: Early man, Milling stone, Intermediate and Late prehistoric. Local cultural assemblages within these four horizons are outlined.

Historic

In 1955, Hero E. Rensch published his account of Pedro Fages' crossing of the Cuyamacas, establishing that Fages used a Native American trail through Oriflamme Canyon. The Battle of San Pasqual of 1846 was authoritatively analyzed by Arthur Woodward in "Lances at San Pasqual", published by the California Historical Society as a special publication in 1948. One of the best accounts of the cattle-ranching boom of southern California was Robert Glass Cleland's The Cattle on a Thousand Hills, published in 1941. Around 1930, James Jasper, the editor of the Julian Sentinel, compiled an extensive biographical history of many of the nineteenth century communities of the inland county. In part because of its frankness, "Trail-Breakers and History Makers of Julian, Ballena, Mesa Grande, Oak Grove, Warner Ranch, Banner, Cuyamaca" has never been published. A typewritten copy can be found at the San Diego Historical Society Library at the Serra Museum. In 1936, Carl H. Heilbron edited a comprehensive history of San Diego County, which included several chapters on the economy of the inland county.

CONTEMPORARY RESEARCH (1960-PRESENT)

The Handbook of North American Indians, Volume 8 edited by Heizer is the most recent and comprehensive publication to describe the Native American groups represented in the BLM study areas. Each group, Luiseno, Cupeno, Diegueno, (Ipai-Tipai) and Cahuilla, is discussed in a separated article prepared by an individual(s) who is familiar with that group. In general, the articles (Bean and Shipek 1978; Bean 1978, Bean and Smith 1978; Loumala 1978) provide a comprehensive overview of the lifeways of each of the Native American groups represented in the BLM study areas. In addition, each of these articles list reference sources and the location of collections relevant to each group. Topical discussions such as those by Wallace (1978); Castillo (1978, 1978a) and Shipek (1978) contribute significantly the understanding of the prehistory and history of the Native American groups represented in the study areas. Wallace (1978) provides an overview of the archaeological periods (9000-2000 BC) represented in California and within this context discusses the prehistory of the San Diego area.

Ethnographic

In order to be concise and descriptive, authors in addition to those discussed above, are listed by regional subdivisional categories. Descriptions of the listed sources can be found in the annotated bibliography provided.

Pertinent Luiseno research has been documented by L. E. Bibb (1972), T. Hudson (1969), Shipek (1978) and R. C. White (1963). Village locational information, ceremonial documentation and social organizational research are the topics of these publications. A sample of individuals who have published research conceming the Cupeno are J. H. Hill (1969, 1970, 1972, 1973), S. Landis (1976) and C. Nolasquez (1973). The topics researched by these individuals are primarily linguistic studies. Hill and Nolasquez (1973) research focused on Cupeno cosmology.

There is a vast amount of material published with the Diegueno as the research focus. Linguistic, demographic, archaeological, kinship, ritual, autobiographical and material culture studies have been reported. Listed alphabetically, individuals who have authored the documentations are F. R. Almstedt (1968, 1971), T. J. Banks (1966, 1972), J. Corrales (1977), D. Cuero (1968), S. A. Cupples (1975), K. Hedges (1966a, 1966b, 1969, 1972, 1975), K. Luomala (1976), J. R. Moriarty III (1965), M. R. Polk (1972), L. F. Roloff (1970), H. Smith (1969), G. R. Van Camp (1973) and J. A. Woodward (1968).

The Cahuilla, located in the northeastern portion of San Diego County, have been intensively researched by Bean and Saubel (1961, 1963, 1972). L. J. Bean (1972) has published the work titled Mukat's People. Bean and Lawton (1967) have prepared a comprehensive bibliograplhy of the Cahuilla Indians. H. R. Harvey (1962) and R. F. Heizer (1974) and H. C. James (1960) have also published on the Cahuilla.

Archaeological

Archaeological investigations post-dating 1960 are briefly summarized in this section. In general, most recent research has been directed towards establishing a more definitive chronology for the San Diego County area and investigating prehistoric cultures within an ecological framework.

E. Hubbs et al. (1960, 1963, 1965), Marcia Bright (1965) and others have published radiocarbon dates from sites in San Diego County. (See appendix I.) Moriarty (1966) developed a chronological sequence which divides San Diego and western Imperial County prehistory into cultural phases based upon radiocarbon dates from stratigraphically controlled sites. "Although the chronologies are not absolute, there are enough data now for a definitive, dated sequence of cultural trait changes, from the earliest to the most recent occupants of San Diego County" (Moriarty 1966:20). Warren (1968) provides an update to Wallace's 1955 chronology and reorganizes Wallace's horizons into cultural traditions based upon ecological adaptations.

Investigations of early man in the southwest and San Diego has been summarized by W. S. Glennan (1972) in his dissertation. Recently, the aspartic acid racemization method of dating (Bada et al. 1974) has reintroduced the controversy about early man in San Diego.

Focusing on the San Dieguito Complex, research was carried out by E. L. Davis (1966); C. N. Warren (1966, 1967); Warren and True (1960-1961); and W. J. Wallace (1978). M. Harding (1951) has described the La Jollan culture and others have archaeologically investigated La Jollan sites (Moriarty 1959; Shumway et al. 1961; Crabtree et al. 1963; Koloseike and Peterson 1963; R. L. Spencer 1963 and 1974; Davis 1976; May 1976). Warren (1964) provides a detailed analysis of the La Jolla Complex of the San Diego Coast.

The Archaeological Survey, University of California, Los Angeles, has also conducted research in southern California since the late 1950s. Annual reports, which summarize the years' activities, include research reports, many of which pertain to the San Diego area.

A survey of a portion of western San Diego County was undertaken to locate sites and to obtain a sample of artifacts in the areas around Valley Center, San Marcos - Escondido, the lower San Dieguito River, Green Valley and Batiquitos Lagoon (Warren, True and Eudey 1961:1). The survey was carried out to elucidate the Early Milling Stone (La Jolla) Complex of coastal San Diego County. Warren, True and Eudey's report (1961) discusses research pertaining to the La Jolla and Pauma complexes, comparing and contrasting the two complexes.

A number of sites within the survey area have been excavated. Results of the excavation of SDi 194, the Del Mar site, are contained in a report by Warren and Thompson (1959). The Scripps Estate Site I excavation is discussed by Moriarty, Shumway and Warren (1959). Results of excavations at the Harris site (SDi 149), the San Dieguito type site, are discussed in Warren and True (1961) and Warren (1966). Warren and True's report also contains a discussion of the San Dieguito Complex with

respect to western San Diego County, southern California and western North America. Warren's (1966) article includes M. J. Rogers' 1938 excavation report, as well as added interpretations by Warren.

Molpa (SDi 308), a Luiseno village located on the slopes of Mount Palomar, was excavated between 1955 and 1957 under the direction of C. W. Meighan. Molpa is important as the type site for the San Luis Rey II (True, Meighan and Crew 1974). Additional research in the Mount Palomar area includes a 1959 survey of Palomar Mountain State Park and adjacent land. Thirty-one sites were located; one, SDi 593 was excavated in 1960 (True and Meighan 1974:121).

Another Luiseno village was excavated by B. E. McCown and reported on in Temeku (1955). Questions have been raised concerning identification of the excavated site as Temeku. The village was originally described as including 300 dwellings but only 30 were delineated and recorded by McCown. An archaeological investigation of the San Luis Rey area (Harrington 1958) is also of interest.

Historical archaeological research in San Diego County has been undertaken in a number of locations. Portions of the Mission San Diego de Alcala have been excavated in recent years (Brandes 1966; 1967; Moriarty 1969, 1971; Moriarty and Weyland 1971). Archaeological investigations at the San Diego Presidio, begun in 1965, has revealed evidence of secular Native American - Spanish interaction (Ezell 1968, 1970; Ezell et al. 1968). Below the Presidio, in Old Town, archaeological investigations have been carried out at the Casa de Machado-Stewart (Ezell and Broadbent 1972). In northern San Diego County, portions of Mission San Luis Rey were extensively surveyed and excavated during the 1950s and 1960s (Boyle 1968; Harrington 1958; Soto 1960, 1961).

Cultural Resource Surveys

A large number of archaeological surveys have been conducted in or near the three study areas. The majority of these have been conducted as a result of San Diego county's requirement that archaeological surveys be conducted on certain properties that are to be developed. In fact, Gary Fink (n.d.) estimates that 1.08 percent of the county has been surveyed as a result of the Environmental Impact Report (EIR) process. Almost all of the reports that describe these surveys are unpublished and pertain to small areas where development was anticipated. Until very recently, these reports were very difficult to locate. Archaeologists at the San Diego County Department of Transportation have recently compiled all of the available EIR archaeological reports for San Diego County into one file. The locations of the survey have been plotted on maps and a system, using edge-punched cards, has been established for retrieving general information about each survey. (Gary Fink 1978: personal communication). Gary Fink (1978: personal communication) plans to publish these maps and an accompanying annotated bibliograplhy in the near future. For this reason EIR archaeological surveys are not discussed. Information on surveys in particular areas can be obtained at the San Diego County Department of Transportation.

Large-scale archaeological surveys have been conducted in San Diego County and several have contributed significantly to the understanding of the prehistory of the area. The following is a brief outline of the larger, regional surveys that have taken place in or near the study areas.

Ronald U. May (1976b) has prepared a report on the survey of the Table Mountain area. Members of the San Diego Archaeologciacl Society served as volunteer crew members. The survey covered a six square mile study area. May's report (1976b) outlines the procedures and problems of the survey, specific areas investigated and estimated percentages of survey coverage. The surveyors found 124 site locations, which are described and evaluated in terms of the prehistory of the Table Mountain area.

Richard Weaver (1976) directed an archaeological and historical survey in the In-ko-pah Gorge area near the eastern border of San Diego County. The study was conducted for the BLM who had contracted the survey to the Archaeologcial Research Unit, University of California, Riverside. The purpose of the survey was to locate and evaluate the cultural resources along two alternative Sundesert Nuclear Project transmission line corridors. Weaver's report (1976) details map sampling methodology which was required by BLM to be consistent with that being used by Helen Wells in Davies Valley just to the east.

Based upon results obtained in Davies Valley, which indicated that 86 percent of all sites occurred in areas of less than 10 percent slope, all of these areas were delineated on U.S.G.S. 7.5 minute maps and a grid system was superimposed. Sample units of less than 10 percent slope within the corridor route or subject to indirect impact were numbered. One hundred thirty six quadrats (1/16 of a section) were surveyed yielding a 12.5 percent sample of each alternative. As a result of the survey 23 sites and 14 limit evidence locales were recorded. Based upon this informtion, predictions were made on the number of sites expect to occur in each alignment.

Davies Valley, a 60 square mile area in southwestern Imperial County, was selected for the testing of a research methodology which applies a two-stage random sampling technique to problems of archaeological inventory (Wells 1977).

The methodology, which required the stratification of the study area into environmental zones on the basis of physiographic and hydrological variables, was a modified version of a research design originally described by Weide (1973). Twelve combinations of variables were determined for the Davies Valley.

The study area was divided into quadrats (each equaling 1/16 of a section), which were superimposed onto stratified U.S.G.S. maps. A five percent sample, consisting of 48 quadrats drawn randomly, but proportionately from the strata, was surveyed.

In the second stage, a five percent random sample survey was conducted on the two priority strata (those with the highest frequency of sites). The site densities obtained in stage II were much lower than the stage I results predicted. Wells (1977:22) concluded the "Physiographic variable were found to be critical in the prediction of site locations, while hydrologic variables were found to relate to site type."

The Yuha Desert Planning Unit delineated by the Bureau of Land Management has been sample surveyed by Desert Planning Staff archaeologists. The sample units (1/8 x 1 mile) were selected on the basis of environmental variables and the data is in the process of being analyzed.

William J. Wallace conducted archaeological surveys in the southern portion of Anza-Borrego Desert State Park. The areas surveyed included Mountain Palm Springs, Indian Gorge, Bow Willow Canyon and Indian Hill. Approximately 50 sites were located (Meighan 1975:14). Artifacts obtained during an excavation at Indian Hill Rockshelter were similar to those in the Pinto Basin assemblage (Wallace 1962:176).

Margaret Morin, under the auspices of the San Diego Museum of Man, and volunteer archaeologists conducted an intensive survey around the perimeter of Canebreak Valley northeast of McCain Valley. Selected portions of the valley floor were also surveyed. A large number of sites, mostly roasting pits and temporary camps, were recorded. The results of the survey have not been completely analyzed; however, the recorded site data is on file at San Diego State University.

Robert Begole (1976) has conducted a survey of approximately 11,520 acres in the southern section of Anza-Borrego Desert State Park. For more specific locations of surveyed areas contact the Department of Parks and Recreation, Sacramento, California, (Begole 1976:23) Begole's surveys, which continue to the present, focus on locating and recording San Dieguito and Early Man sites in the desert.

Several areas of the 20,000 acre Cuyamaca Rancho State Park and the adjacent Rancho Samagamtuma were surveyed between 1961 and 1963. Over 150 sites were located and a few were excavated. As a result of this survey, True (1970) proposed the Cuyamaca Complex and suggested that there is a Milling Stone Horizon-to-Diegueno continuum in inland San Diego County.

Twenty sites were located during an archaeological survey of a 2,300 acre parcel of land in Mason Valley. A crew of six archaeologists, spaced 40 meters apart, surveyed transects in all but the steepest terrain (Bell 1975). Additionally, surveys on state park land in Mason Valley have been conducted. A report has not been prepared delineating the surveyed areas, however, the site records have been filed at San Diego State University.

Rancho de San Felipe, a 12,000 acre ranch situated in San Felipe Valley, was surveyed in 1969 by members of the Pacific Coast Archaeological Society. Thirty-seven sites were recorded during the survey, which was not intensive (Long and May 1970).

Culp Valley and San Felipe Creek were surveyed by a UCLA crew in 1958. Intensive survey in "the flat valley areas and along the lines of the principal drainage" (Meighan 1959:28) resulted in the discovery of 83 sites along San Felipe Creek and 30 sites in Culp Valley. Four additional areas covered during this survey, Coyote Canyon, Clark Lake, Rockhouse Canyon and Collins Valley Indian Canyon, are to the east of the McCain Valley study area.

The archaeologist and assistants at the Anza-Borrego Desert State Park have been conducting a sample survey of a study area that cuts through the center of the park in

an east/west direction (Jan Moore 1978: personal communication). Sample units (1/8 x 1 mile) were drawn randomly and totaled a two percent random sample of the study area. With the exception of a few sample units, the survey is complete. Compilation of the data has begun.

Several surveys were conducted along that portion of the preferred Sundesert transmission line corridor from the San Diego-Imperial County line to San Miguel Mountain, south of El Cajon. In May 1976, archaeological consultants for Wirth Associates surveyed a 1/8 mile by 3 mile transect, paralleling the international border south of Jacumba (Wirth Associates Cultural Resources Office 1976)

The portion of the proposed Sundesert Nuclear Project transmission line corridor from approximately three miles east of Jacumba to three miles west of the town of Campo was also surveyed. The surveyed area was approximately 17 miles long and 1,500 feet wide. Thirty-one sites and 13 isolated finds were located (Johnson 1976).

Weaver (1977) also surveyed this portion of the proposed Sundesert transmission line corridor as part of the overall survey conducted along the preferred Sundesert transmission line corridors. The study area they assessed was divided into 1/4 square mile quadrats. Sample units were chosen randomly but proportionately in terms of geographic zones, sensitivity and physiographic strata. Thirty-nine quadrats were surveyed in southern San Diego County.

Surveys supported in part by the state of California were conducted with the boundaries of Palomar Mountain State Park (True and Meighan 1974). Selected areas adjacent to the park were also surveyed, including the territory identified ethnographically as belonging to the village of Cuca. Thirty-one sites were located but it is estimated that this figure does not represent more than 25 percent of the sites in the area. True and Meighan (1974) describe the sites and artifacts located and compare the artifacts found during the Palomar survey with those reported from other sites in Luiseno territory.

Warren, True and Eudey (1961) discuss the results of an extensive survey conducted in western San Diego County. Three large areas including the Valley Center area, San-Marcos-Escondido area and Green Valley area (which are generally outlined on Map 2 of their report) are located within the Inland Valley study area. The survey was conducted to more definitively outline the Early Milling Stone Complex of the San Diego coast.

An archaeological survey of the 8, 970 acre Buena Vista Creek watershed, near Vista, was undertaken in 1958 (Wallace 1960:278). A total of 37 sites were located; limited testing was carried out at five sites. Pauma, San Luis Rey and possibly La Jollan assemblages are represented in the Buena Vista Creek area.

Historic

Since 1960, a series of useful works were written on the history of inland San Diego County. Several concern the desert areas. In 1961, E. I. Edwards published an

excellent study of Lost Oases along the Carrizo, focusing on the history of Palm Springs (now known as Mesquite Oasis). D. E. Lindsay published her thesis on the history of the Anza-Borrego Desert in 1973. Another valuable work on the history of the desert area of San Diego County is Lester Reed's Old Time Cattlemen and Other Pioneers of the Anza-Borrego Area (1963). Representative of the good local histories that were written are Dorothy C. Schmid's Pioneering in Dulzura (1963), a readable and detailed history of the area located along Dulzura Creek, and Meyer's Historic Buildings of the Ramona Area (1975), published by the Ramona Pioneer Historical Society. More specialized works are L. Fowler's "A History of the Dams and Water Supply of San Diego County" (1963), which describes the construction of the crucial water reservoirs of the county; and W. Harmon's (1964) history of the county's grape industry.

Various social histories were also written. One of the most important was Leonard Pitt's The Decline of the Californios (1966), which describes the effects of the Anglo American "invasion" on essentially Mexican Southern California. In Chiefs and Challengers (1975), George Phillips deals with the relations between Native Americans and the new settlers of southern California. A chapter in his book is devoted to the Garra uprising that took place in San Diego County in 1851. A history of blacks in nineteenth century San Diego County has been compiled from census records by R. Carlton (1977).

In 1960, the first volume of Richard Pourade's comprehensive History of San Diego was published. J. Gordinier analyzed the causes of the limited settlement of the southern hinterland of San Diego County in his M.A. thesis, "Problems of Settlement in the San Diego Foothills" (1966). M. Rustvold (1968) made a similar analysis of San Pasqual Valley, tracing its development from a Native American village to its present status as a green belt. In 1975, Lucy Killea completed her doctoral dissertation of "Colonial Foundations of Land Use and Society in San Diego, 1769-1846", a very useful analysis of the Spanish and Mexican occupation of the San Diego area.

PREHISTORY

Although large gaps exist in the prehistoric record of San Diego County, it is possible to present a unified account and chronological framework in the form of a general regional overview. It should be noted that while not all of the following information applies directly to the study area, inclusion is considered important for a more comprehensive understanding of the entire region.

In general, prehistoric populations in the San Diego County region were hunter-gatherers exploiting their habitats in a direct, non-random, and sufficing manner. Exploitation of available food resources probably necessitated a seasonal pattern of group migration to different ecological zones.

The prehistory of San Diego County is commonly divided into four major periods based upon the cultural changes recognized from archaeological remains: Early Man, San Dieguito, La Jolla, and Late Prehistoric.

EARLY MAN

Major difficulties exist in assessing the validity of the presence of early man in southern California. Lack of artifactual material has caused problems in defining this ancient stage and in establishing its temporal boundaries. Because of problems in dating and the diverse areas in which work has been done, a solid chronology has not been established for this early period (Wallace 1962:174).

The proposed existence of early man in this area was initially based on "artifactual" deposition at the controversial Texas Street site in San Diego (Carter 1957). Carter's evidence consisted of stone artifacts, hearths, food refuse (bone), and burned rock (Carter 1957:314). He stated that

> . . . this former valley fill contains a record of localized intense fires with which burned and percussively broken rock, mammal bone, marine shell of a warm-water type, and marine mammal bone are associated. This combination is considered evidence of man's presence. (Carter 1957:320)

More recently, an assemblage similar to that of the Texas Street site has been recovered during excavations at Buchanan Canyon in San Diego (Moriarty and Minshall 1972).

Carter's (1957) conclusions based on the analysis of the Texas Street site have been criticized, most notably by Stewart (1957), Wormington (1957), Krieger (1958, 1964), and Meighan (1965). They suggest that the "artifacts" which Carter dates as older than 35,000 years BP (1957:318), are naturally burned and fractured stones and merely appear to be man-made.

A purportedly early man cairn burial has been excavated near Calexico in the Yuha Basin (Barker, Burton, and Childers 1973; Childers 1974; Rogers 1977). A radiocarbon date of 21,500 BP was obtained from caliche (calcium carbonate) coating the human skeletal material. A radiocarbon date of 22,125 BP was obtained from caliche

deposits on the ciarn boulders. A thorium date of 19,000 BP was obtained from the same caliche sample as the 22,125 BP radiocarbon date (Bischoff, Merriam, Childers, and Protsch 1976:128). Until geochemical correctional factors have been calculated for calcium carbonate in the Yuha Basin, however, dates obtained from this material remain inconclusive (Weide and Barker 1974:78).

Recently, amino acid racemization has been used for the dating of skeletal material from the San Diego coastal region. Dates of 28,000, 44,000, and 48,000 BP have been obtained (Bada, Carter, and Schroeder 1974:792, S. Rogers 1974:1). These dates, which are much older than the dates obtained through radiocarbon dating (S. Rogers 1974:2), and the validity of the dating technique, have been regarded with skepticism (Hare 1974).

Although the earliest radiocarbon date, obtained from the material at the C. W. Harris site in western San Diego County, is 6990 BC ± 350 years (ea. 9,000 BP), many researchers posit 11,000 or 12,000 BP as the earliest aboriginal occupation of this southern portion of California (Warren and True (1961:261; Davis, Brott, and Weide 1969; Bettinger and Taylor 1974; Weide and Barker 1974).

SAN DIEGUITO

The earliest generally accepted human population to inhabit the study areas is represented by the San Dieguito Complex. It has been hypothesized that San Dieguito tradition came to the San Diego coastal area from the southern Great Basin (Brott 1966:142; Moriarty 1966:20; Wallace 1978:27), perhaps as early as 10,000 to 11,000 years before present (Warren and True 1961:261), and persisted until approximately 7500 B.P. (Meighan 1965:712; Moriarty 1966:21). Wallace (1978:27) indicates that in all probability San Dieguito assemblages "represent regional variants of an early hunting tradition that prevailed over a wide area in southern California....."

Rogers (1929:457) originally named the complex Scraper-Maker after the most common artifact in the assemblage. The scrapers occur in a variety of forms: ovoid side scrapers, keeled side and end scrapers, rectangular end scrapers, triangular end scrapers, large domed scrapers, and flake scrapers (Warren 1967:173). In addition to the scrapers are leaf-shaped knives and projectile points, chipped stone crescents, engraving tools, choppers, pebble hammerstones, core hammers, and cores (Wallace 1955:218; Warren 1978:27; Warren and True 1961:251-254; Heizer 1964:122; Warren 1967:173-174). Well-controlled percussion flaking was used to produce the majority of the tools, though a few specimens exhibit pressure flaking. These tools were primarily produced from local felsite and porphyritic basalt, occasionally produced from quartz and quartzite, and rarely produced from cryptocrystallines such as chalcedony (Warren and True 1961:251, 262; Warren 1966:13-14).

The large number of cutting and scraping tools are generally considered as an indication of hunting activities (Warren and True 1961:262; Meighan 1965:712). Moriarty states that even though projectile points are few in number, their presence implies hunting, "but their scarcity suggests that hunting alone was not their basic economic preoccupation" (1969:3). These people appear to have consumed foods that

were easily obtained and processed without highly specialized tools (Moriarty 1969:3). The San Dieguito type site (C. W. Harris site, SDI-149; Warren 1966), located along the San Dieguito River in San Diego County, has yielded valuable information from stratigraphic prehistoric deposits. The lack of other site information concerning San Dieguito midden deposit and an absence of animal bone from San Dieguito sites, however, make any inferences regarding the economy of these scraper-maker people rather tentative (Warren and True 1961:275; Meighan 1965:712).

Rogers (1939) proposed four phases of the widespread San Dieguito complex: San Dieguito I, II, III, and IV. There are no definitive dates for the phases as they fluctuate spatially and temporally throughout the geographical region in which the complex is represented.

San Dieguito I (previously Malpais) sites, found on rocky terraces and mesalands (Rogers 1939:6), have yielded artifacts which are less refined and less specialized than artifacts of subsequent phases. As yet, however, San Dieguito I has not been found west of the Peninsular Range of southern California (Rogers 1966:79).

For San Dieguito II, primarily found on mesas and ridges, Rogers suggested that a

> . . . westerly movement took place from the Colorado Desert in Southern California and a narrow strip of Mexico paralleling the Mexican border. This migrational movement seems to have pursued a course through Jacumba Pass of 3425 feet elevation . . .
>
> This deduction is based on the presence of a series of archaeological sites leading up from the desert, through the pass and to the west. (Rogers 1939:79)
>
> During their migration to the west, the people fanned out both to the north and the south as far as the San Luis Rey River valley and perhaps beyond . . . (Rogers 1939:8)

San Dieguito II artifacts are primarily produced from local materials and are percussion flaked (Rogers 1966:87).

San Dieguito II and III appear to be quite similar. However, site locations differ. Rogers (1966:85) suggested that in response to (hypothesized) drought conditions, San Dieguito III peoples moved their camps to the bottom lands of the major river channels. In addition, the acquisition of pressure flaking and use of new materials (porphyry, quartz, and quartzite) distinguish San Dieguito III from the earlier phase (Rogers 1966:87). Lastly, San Dieguito IV is known only in Baja California.

By 1929, Rogers (1929:454-455, 457) had recognized four areas (loci) of Western San Diego County containing "Scraper-Maker" remains: three on the coastal plateau along the Coast Range and one near Escondido. He described each locus as being an area of intensive occupation with at least one site of sufficient size to be termed a village with small camp sites scattered in the local area.

As of 1966, approximately sixty-five sites in San Diego County had yielded San Dieguito artifacts. Twenty-three sites were attributed to San Dieguito II and ten sites were considered to be of San Dieguito III origin. However, this is confused by thirty-five sites that Rogers reported containing both San Dieguito II and III (Brott 1966:143). It might be added that a tabulation of prehistoric sites by cultural period was attempted from data recorded on the site records obtained for the present study. The data, however, is insufficient to yield such tabulation. Whether or not Rogers' assumptions are correct can only be determined by further field research.

LA JOLLA

It is believed that the La Jolla complex, a coastal manifestation of the extensive Milling Stone Horizon in southern California (Wallace (1978:28), appeared in the area approximately 7500 BP (Warren and True 1961:261; Warren 1964:125; Brott 1966:142; Wallace 1978:28). Although the La Jolla cultural remains are mainly located to the west of the study areas, the complex is of regional importance and is therefore included in the discussion.

It has been suggested that La Jollan peoples migrated from the interior regions of southern California to the Pacific Coast (Warren, True, and Eudey 1961:28; Warren 1964:131); the "Milling Stone complexes may represent a coastward movement of inland populations finding the interior deserts increasingly unfavorable for human occupation" (Kowta 1969:36).

There are a number of stratified sites with both San Dieguito and La Jolla cultures represented (Brott 1966:142), but there appears to be no cultural relationship between the two (Warren 1964:130; 1967:179). The LaJolla toll assemblage appears to be more crudely manufactured than the San Dieguito tools. For this reason, Rogers (1929) originally placed the La Jolla culture pre-dating the San Dieguito complex and named them the Shell-Midden people due to the large amounts of shell found in their midden deposits (1929:466-467). According to radiocarbon and stratigraphic dates, however, the La Jolla materials post-date San Dieguito deposits (Meighan 1965:712).

Most of the tools found in LaJolla sites appear to be unspecialized and belong in a multi-purpose category (Warren 1964:160). The period is primarily defined by the appearance of milling implements: manos and metates (Warren, True and Eudey 1961:15; Crabtree, Warren, and True 1963:329; Warren 1964:4; Heizer 1964:123; Krieger 1964:59; Meighan 1956:712). Crude percussion flaked tools, also characteristic of the La Jolla culture, include choppers, hammerstones, scraper planes, small domed scrapers, crescents, cores, blades, flakes, and few points and knives (Warren, True and Eudey 1961:17-21,23; Crabtree, Warren and True 1963:329-341). The bulk of the lithic assemblage was produced from local materials such as basalt, basalt porphyry, and other fine-grained volcanics, felsite, quartz, and granite. Chert, jasper, obsidian, and chalcedony, occurring in only small amounts in the archaeological record, are not local materials and are thought to have been imported from the deserts to the east (Warren, True and Eudey 1961:13-14, Warren and True 1961:256; Crabtree, Warren and True 1963:329).

Other characteristics in addition to the lithic assemblage are flexed burials and, perhaps, basketry. Human burials have been found in flexed position, placed on their sides with the heads oriented toward north. Burials, individual or cemetaries, are sometimes covered with inverted metates or rock cairns. Mortuary offerings, restricted to beads or ornaments, large shells, and donut-shaped stones, are occasionally found with the skeletal remains (Rogers 1945:172; Warren 1964:4, 180-181). Fragments of asphaltum show impressions of woven material indicating that basketry was produced during this period (Warren 1968:2).

La Jollan sites are generally lcoated on rocky foreshores, old terraces and mesas surrounding lagoons, "at the back of lagoons where fresh water was present, or on the few bays and inlets on the coast proper, where fresh water was obtainable and fish could be taken" (Warren 1964:79, 168). During early La Jolla occupation, the sea level was lower than present. Many of the La Jolla sites which were located near the shore are now submerged near shore at depths of 30 to 40 feet (Moriarty 1966:23).

The continuity of the artifact assemblage implies a stable gathering economy which may have been semi-sedentary (Rogers 1945:168; Warren 1964:176). The large number of milling tools is generally assumed to reflect the importance of seed processing and plant food consumption (Warren, True and Eudey 1961:24, 26; Warren 1964:173). In addition, the shellfish food supply, predominantly Mytilus, Pecten, and Chione, was capable of supporting a "relatively large population for a gathering economy. There may have been movement to the foothills of the Peninsular Range for exploitation of additional resources as part of a seasonal round (Warren, True and Eudey 1961:28). The scarcity of hunting tools and animal bones suggest that hunting was not of great importance to the La Jolla economy (Warren, True and Eduey 1961:23).

According to the archaeological record, about 3000-4000 BP, the amount of shell found in the La Jolla middens decreases and site locations shift geographically to areas farther inland. It is believed that the lagoons silted and were no longer a suitable environment for the number of shellfish necessary to support sizeable populations (Warren 1964:106; Warren and Pavesic 1962:414). Warren (1964:184, 190-194) suggests that with the decrease of shell in La Jolla middens and a slight increase in the number of projectile points, there may have been a shift to a greater reliance on hunting.

A midden site (SDi-560) in the inland San Marcos area contained Pecten and Chione shell and suggests that there may have been contact with coastal people or that coastal people may have migrated seasonally to the inland areas (Warren, True and Eudey 1961:24). This inland complex of the San Marcos-Escondido and Valley Center areas is the Pauma complex (True 1958:255).

Davis has suggested that

> . . . the La Jolla may not represent a complete culture at all, but be merely a limited and seasonal expression of the annual gathering round of people who were general hunters and foragers whose lifestyle and technology were considerably more complex at other places and different times of the year. (1976:3)

Because there are, at present, no stratified sites, temporal distribution of the Pauma complex remains uncertain (True 1958:262) and other interpretations of this complex exist. Because characteristics of both complexes appear in the Pauma Complex, Moriarty (1967) suggested that the Pauma complex represents a transitional stage between the San Dieguito and La Jolla. A third alternative is that the complex may represent an autonomous aboriginal group inhabiting the inland region.

Pauma sites are usually located on alluvial fans, exposed knolls or terraces overlooking intermittent water courses (True 1958:257, 262).

The material assemblage consists predominantly of portable milling implements of granite. Chipped stone artifacts of felsite or imported chalcedony, chert, and jasper are present, but not common (True 1958:258, 262). Other characteristic artifacts include basalt and felsite scrapers, flakes, cores, cobble hammers, and some core hammers. Projectile points are present, but not common (True 1958:258-260).

The lack of midden and house features implies temporary occupation (True 1958:262) or that the sites supported relatively small populations (Warren, True and Eudey 1961:24). The milling features imply seasonal settlement with a reliance on seed-gathering and processing for subsistence needs (True 1958:262).

The terminal date of the La Jolla complex is uncertain. Warren (1964: 4, 125-126, 207, 222) believes that a long span of uninterrupted cultural continuity is exhibited by the cultural materials and that the La Jolla remained relatively unchanged until the introduction of the San Luis Rey (Shoshonean) complex and Yuman culture between 1200 and 600 BP. This outside influence may have occurred earlier than Warren suggests (Rogers 1945; Moriarty 1966).

The Yuman and Shoshanean influence is represented by a number of cultural changes: the practice of cremation replaced flexed inhumations; a few mortars and pestles appear; small, well-made triangular points appear (Warren, True and Eudey 1961:27; Warren 1964: 191, 207-208); an increased diversification of pressure flaked artifacts and an increased use of imported lithic materials (Moriarty 1966:24).

LATE PREHISTORIC

The beginning of the late prehistoric period is generally marked by the establishment of the Shoshonean culture (San Luis Rey I and II) in northern San Diego County, and the Yuman culture (Cuyamaca) in the southern portion of the county. Rogers (1946:170), suggested that 1000-1500 years ago Shoshonean groups extended out of the Great Basin to southwest California. Yuman groups migrated to the area from the Colorado River area, bringing with them a pottery-producing technology.

According to Warren, San Luis Rey I is defined by

> . . . the occurrence of small triangular projectile points, mortar and pestle, mano and milling stone, and simple flake scrapers. San Luis Rey II exhibits all of these plus pottery, cremation and pictographs (1968:5).

The Cuyamaca culture appears to be very similar the San Luis Rey II (Wallace 1968:5).

Population increased as settlements are more extensive or "perhaps small local groups joined together to form larger villages" (Wallace 1955:221).

Descriptions of the Cuyamaca and San Luis Rey complexes reveal that both exhibit many of the same characteristics. Both seem to reflect hunting-gathering economies with an acorn based subsistence. Settlement patterns were established with a concept of permanent settlements, with each settlement having auxilary base camps for hunting and gathering activities. Characteristic lithic materials consisted of bedrock mortars, metates, manos, pestles, arrowshaft straighteners, small, triangular projectile points, and the use of both percussion and pressure flaking methods. Pottery vessels, hearths, Olivella shell beads, rock art, rock wall enclosures, and cremations were also included in both complexes (True 1970: 45-59).

Although much of the cultural material is similar for both complexes, True (1970:53-54) suggests the following traits as the elements which differentiate the Cuyamaca from the San Luis Rey.

The Cuyamaca had well-defined cemetaries which had grave markers and were located away from the living areas. The San Luis Rey had no cemetaries. Cuyamaca cremations were usually placed in pottery vessels and interred with specially manufactured mortuary offerings such as miniature ceramic vessels and shaft straighteners, as well as elaborate projectile points. The San Luis Rey did not collect the ashes following cremation. In addition, the San Luis Rey produced only an occasional miniature ceramic vessel. The Cuyamaca assemblage also appears to reflect a preference for side-notched points and includes a number of scrapers and scraper planes in contrast to the small number found in the San Luis Rey. Ceramics are represented more extensively in the Cuyamaca artifact assemblage and include a wide range of forms and specialized items such as rattles, bow pipes, and effigy forms. The Cuyamaca appear to have had a well-developed steatite industry, while that of the San Luis Rey was weakly developed. Milling stone implements were used to a substantially higher degree in the Cuyamaca complex.

ETHNOGRAPHIC BACKGROUND

The "Ethnographic Background" contains information on the Native American populations still extant within the study area. Native Americans located within the San Diego region are included either within the Shoshonean or Yuman linguistic group. The Cahuilla, Luiseno and Cupeno are Shoshonean-speakers while the Diegueno to the south are Yuman speakers. The proper name designation for the subdivisions of the Diegueno has been a subject of debate over the last few years. For the purposes of this report, it was felt that the greatest amount of clarity is obtained through use of the term Diegueno when referring to the group. If an author used a more specific name (e.g. Tipai, Southern Diegueno, etc.) then the term adopted by that author was used rather than Diegueno. The terms Northern or Northwestern Diegueno and Ipai are roughly equivalent and usually Southern or Southeastern Diegueno, Tipai or Kumeyaay refer to the same group. Tribal territories are categorized into Luiseno, Cupeno, Cahuilla and Diegueno groupings; the latter two are further subdivided. Reference to the Territorial map or the author cited (Figure 2) should provide orientation.

The hunting and gathering type of exploitation in the form of a seasonal round, which optimized resource availability in the highly variable environment, is described in the settlement-subsistence section.

Distinguishing the minor environmental and resulting subsistence differences between study area groups, specifics concerning village participation, physiographic factors, ethnobotanical information and human manipulation of the environment are discussed.

The section on socio-political and religious organization reviews the universality of the kin group. Positions of power and major ceremonies are briefly outlined, demonstrating the relationships between social, religious and economic activity.

The reciprocal system of trade, which served to distribute goods among the groups and faciliate a network of communication, is also discussed. The survival of the Native American groups largely depend on trading relationships. The actual items exchanged and the groups involved is the focus of the Trade section with informative tables summarizing the majority of the material.

Due to the nature of this report, the final concluding section, Material Culture, is comparatively lengthy because the contained data is important for Phase Two considerations. This discussion is organized into five categories; Architecture, Hunting Implements, Milling and Grinding Implements, Utilitarian Arts and the Miscellaneous. Although there appears an attributic homogeneity amongst the majority of items in the material culture of the study area groups, diagnostic variation is stressed in preparation for field survey. Both archaeological and ethnographic data was used in compilation of this section.

TERRITORY

A map (see Figure 2) showing the traditional territories has been prepared. Included on the map are the boundaries of Native American tribal groups, according to

FIGURE 2

selected sources encountered during the inventory of material. It was found that territorial boundaries of the southern Californian tribes are at times arbitrary and differ considerably according to the source used. There were cases where within a single bound source (i.e., in the Handbook of North American Indians -California Volume), tribal boundaries changed with each contributing author. It was decided to distinguish the differences between the major sources (i.e., Kroeber 1925, Heizer 1978, Gifford 1918, etc.) in order to indicate the range of variability when compiling this type of information.

Within the project area four tribal groups are identified, the Diegueno, Luiseno, Cahuilla and Cupeno; the Cahuilla and Diegueno are further subdivided. Alternative names have been utilized to label the specific groups and will be discussed below.

Luiseno

Described by Kroeber (1925:643) as hill rather than mountain people, the Luiseno resided in the area west of the divide that extends south from Mount San Jacinto. Comprising 1,500 square miles, the Luiseno territory had a western boundary that extended from Agua Hedionda Creek northward to Aliso Creek (Bean and Shipek 1978:550). Sparkman (1908:189) describes the southern territorial line as originating at the mouth of Agua Hedionda and extending east to include San Marcos ranch and most of the Escondido rancho. Their territory also included the Mendenhall and Maxcy ranches and Guejito (San Pasqual Valley) and extended northward from the San Jose Valley to the Cahuilla Valley. Recent data suggest that the boundary may be in error and should be moved northward to the San Luis Rey Valley (True et al. 1974: 75). Bordered to the east by Cahuilla and to the south by Diegueno, the Luiseno inhabited the areas south and southeast of the Juaneno, Grabrielino and Serrano territories.

Cahuilla

Bean (1978:575) identifies Cahuilla territory as being located near the geographic center of southern California. Described as somewhat irregular in shape, the Cahuilla territory has been defined as the inland basin between San Bernardino Range and the range extending southward from Mount San Jacinto (Kroeber 1925:693).

Specifically, Bean (1972:24) states ". . . areas claimed as boundary indicators today are the summits of the San Bernardino and Chocolate mountain ranges to the north; the area approximate to Borrego Springs to the south; a portion of the Colorado Desert west of the Orocopia Mountains; and the Colorado River to the east; and the San Jacinto Plan near Riverside; and the eastern slopes of the Palomar Mountains to the west."

The Cahuilla territory is composed of three physiographic regions within the basin; San Gorgonio Pass, Colorado Desert and the mountains south of San Jacinto. The Mountain Cahuilla territory lays within the ethnographic overview study area. The Borrego desert served as a boundary between the Cahuilla and the southern tribes of Diegueno.

Dieguenо

The Pacific Ocean was the western extent of the Dieguenо territory and the Luiseno land, Cupeno land, and Cahuilla territory served as borders to the north (Kroeber 1925:709). Kroeber felt that no precise limits could be set for the eastern and southern extent of the Dieguenо territory (1925:709). The territory belonging to the Dieguenо is further subdivided into two and sometimes three regions within San Diego County depending on which source is used. Kroeber (1925) divided the Dieguenо into a northern and southern region. The Northern Dieguenо claimed that they didn't live beyond the eastern foot of the mountains (Kroeber 1925:709). The Southern Dieguenо, allied with the Yuman bands of the northern portion of Baja California, inhabited the area indicated on the regional map (see Figure 2). Kroeber's southern limits for their territory were more or less determined by the international boundary of U.S. and Mexico.

Katherine Luomala (1978:593) has designated the name "Ipai" for the Northern Dieguenо and the name "Tipai: for the Southern Dieguenо groups. "Ipai-Tipai territory extended protohistorically from approximately 33° 15' latitude in the north with the San Luis Rey River mouth a landmark, to about 31° 30° latitude in the south, with Todos Santos Bay a likely marker "Luomala 1978:593). The coastal boundary extended from Aqua Hedionda to San Diego for the Ipai, with a southern longitudial boundary running from San Diego to approximately where San Felipe Creek intersects the Imperial-San Diego County line (Luomala 1978:593).

Ken Hedges (1975) identifies the Southern Dieguenо (Taipais) as Kumeyaay. Bordered on the north by Northern Dieguenо, Cupeno and Cahuilla, the Kumeyaay were west of the Quechan (Yuma) and north of Cocopa. Hedges (1975) and True (1974) have stated that pictorgraphic differences (composite vs. geometric) can be utilized to distinguish the boundary between Northern and Southern Dieguenо.

Cupeno

The Cupeno territory encompassed the entire valley of San Jose de Valle and the mountainous area at the headwaters of the San Luis Rey River (Bean and Smith 1978:588). Roughly circular in shape, the area inhabited by the Cupeno was ten miles in diameter (Bean and Smith 1978). One of the smallest distinct groups in California, the Cupeno resided in two permanent villages: Kupa and Wilakal. The majority of sources encountered agree with Heizer's (1978) larger Cupeno territory rather than the more limited one designated by Kroeber (1925).

LATE PREHISTORIC SETTLEMENT-SUBSISTENCE PATTERNS

Portions of the traditional tribal lands of the Dieguenо, Luiseno, Cupeno and Mountain Cahuilla are located within the Inland Valley, McCain Valley and Otay-Hauser study areas. Although there are differences in socio-economic, linguistic and settlement-subsistence patterns which serve to distinguish each group, many similarities exist in terms of occupation and exploitation patterns (Bean 1972:69, Shipek 1977:79).

Prehistorically, the aboriginal groups generally practiced a hunting-gathering economy, shifting locations within defined territories in response to the seasonal availability of food resources. It is generally agreed that this pattern of subsistence was augmented by the practice of some form of agriculture. The extent to which it was developed and relied upon, however, is currently being researched and debated (see Bean and Lawton 1973; Shipek 1977).

The Diegueno, Luiseno, Cupeno and Mountain Cahuilla functioned within environmentally diverse regions utilizing the varied natural resources available to them (Bean and Saubel 1972:9; Shipek 1977:46; White 1963:104, Van Camp 1972:24). Certain vegetal foods, such as acorn, mesquite and agave were relied upon as major food resources and supplemented by other floral and faunal supplies.

The following is a discussion of the settlement patterns and subsistence strategies of the Diegueno, Luiseno, Cupeno and Mountain Cahuilla. Although each cultural group inhabited and exploited a more expansive region than that represented by the study area, this essay is oriented towards a description of the specific settlement-subsistence patterns practiced within the study areas.

Settlement-Subsistence Strategies

Prehistorically the aboriginal populations practiced essentially a hunter-gatherer subsistence strategy. A cyclical pattern of transhumance was followed regulated by the stability and availability of floral and faunal resources. Inhabited territories were regions of high environmental variability, which offered a broad range of climatic, topographic, geologic and biologic features (Bean and Saubel 1972:9; Shipek 1977:46; White 1963:104; Van Camp 1972:24). Exploitation of resources was undertaken in an optimizing and sufficiency manner, and was guided by and reflected in the social, political and religious systems practiced by the populations (Shipek 1977; Bean 1976).

Settlement Patterns

Tribal territories consisted of a number of environmental zones. The Diegueno occupied the most diverse region, having access to Coastal, Lower Sonoran, Upper Sonoran, and Transition life zones (Luomala 1978:593-594; based on Hall and Grinnell 1919). The Luiseno exploited resources within Coastal, Upper Sonoran and Transition life zones.

The Cahuilla, whose territory did not include access to the coast, occupied a region consisting of Lower Sonoran, Upper Sonoran, Transition and Canadian Hudsonian life zones (Bean 1978:575-576; Bean and Saubel 1972:9-13). The Cupeno occupied a considerably smaller and more homogeneous environment, having only the Upper Sonoran and Transition life zones directly available to them.

Bean (1972) has described settlement patterns for the Cahuilla. Although it is assumed that the Cahuilla shared a similar ecological base and subsistence system with the Cupeno, Luiseno and Diegueno (Bean 1972:69) and that the groups had similar cultural adaptations to the environment (Shipek 1977:79), some differences may exist

in the settlement patterns of each group. Enough similarities exist to justify use of Bean's reconstruction as a model which can generally be applied to the four groups under consideration. Differences between the settlement patterns of the Cahuilla and the other groups have been noted where documentation exists to substantiate them.

Within the cultural territories of the Diegueno, Luiseno, Cupeno and Mountain Cahuilla, were further divisions in land ownership. Bean (1972:70) describes the Cahuilla territory as being broken into smaller zones, each of which was owned by a sib. White has called the divisions rancharias, and suggests that the Luiseno territory was broken into approximately 50 rancharias in pre-mission times (White 1963:117). Strong (1929:185) documents two major clan groupings within Cupeno territories. The Diegueno were divided into bands, each of which claimed certain lands identified by natural landmarks (Luomala 1978:597).

Territories characteristically cross-cut life zones and as such offered a wide variety of natural resources for exploitation by the aboriginal populations. They contained all the features necessary for maximum efficiency in the harvesting of food and other resources according to daily need, seasonal availability, accessibility and defensibility" (White 1963:116-117). A series of permanent village locations occupied by separate linages, were the foci of these sub-territories. Villages were situated from two to three miles apart and connected by a series of trails. Resource loci were controlled by each village, although some resource concentrations were under the jurisdiction of the subgroup (Band, sib, rancharia or clan aggregate) and were commonly exploited by the entire village population (Luomala 1978:597: Strong 1929:248; Sparkman 1908:190). From the village site approximately 80 percent of the food resources were located within a two to five mile radius (Bean 1972:74). Excursions for collection of fauna and floral resources were generally limited to one day. Longer trips of two days to several weeks might occur with the seasonal gathering of major floral resources such as agave, acorn, mesquite or pinyon (Bean 1972:71). At this time up to half the population might leave the village to participate in the communal collection of these staple food resources. During these short gathering journeys, seasonal camps, extractive and processing stations were occupied by up to half the village population. They were subsequently abandoned, possibly to be reoccupied during another visit.

Village, seasonal camp, extractive and processing sites were located with respect to the resources to be utilized. Permanent villages were generally located in the lower reaches of the Upper Sonoran life zone, at locations that offered maximum access to a wide variety of ecozones (Bean 1972:20). As a consistent water supply was one of the basic requirements for the choosing of a village site, they were often located in well watered canyons or near streams or springs (Bean 1972:73). For protection, villages were situated in sheltered foothills or valleys (Luomala 1978-599) and in thermal belts offering warm and consistent temperatures (White 1963:120; Shipek 1977:46, Bean and Shipek 1978:551). Seasonal camps and extractive sites (such as acorn or agave procurement sites and quarries) were generally located in areas of high resource yield so as to minimize energy expenditure. Trails, and surface sites in association with them, would be expected in natural passageways, such as drainages and canyons, which ran between village loci and procurement stations.

Occupation of a village was year-round; however, population size was variable dependent upon the extent of external resource procurement activities. Occupation and utilization of seasonal and procurement camps was more sporadic. A site may have been visited annually or only once and then abandoned.

Seasonal subsistence cycle

The cyclical pattern of resource exploitation was carried out in a vertical manner, crosscutting various life zones and affording access to faunal and floral resources as they matured (White 1963:116; Bean 1972:74; Luomala 1978:599). With the exception of the Canadian-Hudson life zone within the Cahuilla territory, all life zones were extensively utilized. Up to 5 percent of the Luiseno territory, consisting of mud flows and rocky crags, may have been in disuse, but these areas may have had mythological associations (White 1963:122).

Seasonal exploitation was geared mainly towards the availability of floral resources. Faunal resources, being a secondary source of sustenence, were hunted in conjunction with the pattern of vegetal gathering (Luomala 1978:599). Aboriginal groups began gathering within the lower canyons and river bottoms and moved progressively to higher elevations throughout the year, as plant resources became available.

In the spring, gathering took place in the lower reaches of the territory. Short gathering excursions would be taken within a few miles travel of the village (Bean and Saubel 1972:20). The bulbs of wild hyacinth (*Brodiaea sm.*) and wild onion (*Allium validum*) were dug up and eaten. Greens such as filaree (*Erodium L'her*) and mallow (*Malva sp.*) were harvested, after the first rains, to be eaten fresh or boiled. If the cultural territory included access to the desert floor, as was the case with the Cahuilla and Diegueno, agave (*Agave deserti*), barrel cactus (*Ferocactus acanthodes*), and beavertail cactus (*Opuntia basilaris*) were prime for harvest. Agave was an important source of food. Stalks of the plant were roasted in great quantity for immediate use and stored for later consumption. Within the study area, collection and preparation of agave occurred on the western and southern slopes of the Santa Rosa Mountains, in Coyote Canyon (Bean and Saubel 1972:31), and east of the Volcan Mountains (Hedges 1966:44). Yucca (*Yucca whipplei*) is prepared similarly to agave and is found in Chaparral and Desert Transition environments.

As summer approached, berries, seeds and fruits of the chaparral-covered slopes ripened and were gathered. Berries from wild grape (*Vitis girdiana*), elderberry (*Sambucus mexicana*) and sumac (*Rhus sp.*) were eaten fresh or dried and stored. Elderberry is found in canyons and open flats below 4,500 feet in elevation and is commonly associated with village sites (Bean and Saubell 1972:138). Seeds of the sages (*Salvia apiana, S. columbariae* and *S. mellifera*) were gathered from chaparral and coastal sage scrub plant communities. The seeds were important medicinally as well as for food (Sparkman 1908:299: Hedges 1966:27-28; Bean and Saubel 1972: 136-138). Fruits of the desert apricot (*Prunus fremontii*), holly-leaved cherry (*P. ilicifolia*) and chokecherry (*P. virginiana*) were much esteemed as fresh fruit. They were collected from the canyons and foothills and were often found within a mile or so of village sites (Bean and Saubel 1972:121). Upland valleys held extensive fields of

native grasses. Grass seeds were collected by means of a "seed beater" basket and ground into meal. Within the study area Valley de San Jose, Escondido Valley, Pamo Valley, and smaller mountain valleys contained native grassland.

Oak was unquestionably the most important food source of Native American populations residing in the study areas. It is estimated that up to 50 percent of the diet of the inland Luiseno consisted of acorns (White 1963:121). The relatively reliable abundance of acorns contributed to the lack of highly developed agriculture, (Baumhoff 1963) and to the sedentary nature of Indian populations (White 1963:116). Bean and Saubel (1972:122) suggest that "the acorn complex of the Cahuilla is extremely important to our understanding of their migration and settlement patterns, development of ownership concepts toward the environment, and their attitudes toward division of labor".

Major excursions to the mountain oak groves were made from October to November (Bean and Saubel 1972:125; Hedges 1966:35; Sparkman 1908:193-194) to gather, process and store acorns. Acorns of the black oak (Quercus kelloggii) were the most favored, with coast live oak (Q. agrifolia) and canyon oak (Q. chrysolepis) being next preferred. In times of food shortage scrub oak (Q. dumosa and Q. engelmannii) were used but not favored (Sparkman 1908:233).

Oak resources were generally found within five to twenty miles of the village site (Bean and Saubel 1972:123). The Diegueno gathered acorns from the area around Cuyamaca Peak and the Laguna Mountains (True 1970:55-56; Spier 1923:307). Palomar Mountain was the area the Luiseno most frequently visited to harvest acorn (Sparkman 1908:190). The Cupeno gathered acorns from the Hot Springs Mountain and San Ysidro Mountain areas (Strong 1929:248). The Mountain Cahuilla made yearly trips into the Santa Rosa Mountains to pick acorns (Bean and Saubel 1972:124). (Refer to Bean and Saubel 1972:121-131 for a complete discussion on acorn gathering, processing, nutritive value, and distribution.)

During winter months, few floral resources were available for harvest. Populations subsisted mainly on stored foods such as acorn, dried berries and agave. At this time a high protein intake, from the eating of faunal resources is hypothesised by Bean (1972:156). Hunts for rabbit, deer, mountain sheep and antelope were undertaken during this period.

Aboriginal Land Management

Incorporated into the aboriginal hunter-gatherer subsistence strategy were environmental manipulations (Lawton and Bean 1968) "designed to increase the supply of wild plant foods, improve bearing or insure the appearance of wild plants in a particular area." (Downs 1966:54). The manipulations included the cultivation of native plants through burning, sowing of wild seeds, transplanting of native flora and maintenance of native plants (Bean 1972, Bean and Saubel 1972, Shipek 1977, Lawton and Bean 1978, Bean and Lawton 1973). Additionally, there is some discussion of the native populations cultivating introduced plants, such as corn and squash, during prehistory (Shipek 1977, Bean and Lawton 1976).

Burning took place in late summer and fall (Bean and Lawton 1973:xx; Shipek personal communication in Bean and Lawton 1973:xxii) and was used to enhance both plant and animal resources (Aschmann 1959). Rabbit hunts were undertaken by means of burning (Spier 1923:337, Bolton 1927:132). Burning of chaparral and grasslands increased greens which encouraged deer and rabbit populations (Shipek 1971:10, 11). Firing was also used to clear brush, and kill pests and diseases from trees (Patencio 1943:69).

Planting of native plants by aboriginal populations is scantily documented. Bean and Lawton (1973) have compiled a number of historical references to cultivation by the aboriginal populations during the contact period. These accounts noted the existence of green cultivated "fields" and "harvesting activities" by the Indians (Bean and Lawton 1973:xxxi-xxxv). Shipek (1977) has gathered data from informants stating that native flora, such as grasses, oaks and herbs, were planted in fields near the home. Broadcast planting of native grass seeds was an important aspect of subsistence (Shipek 1977:123:128). The technology necessary for the growing of native plants was minimal. Clearing of fields by burning or grubbing, sowing of the reproductive portion of the plant and slight maintenance (such as weeding or pruning) was all that was undertaken to encourage growth.

It has been suggested by Shipek (1977) and Bean and Lawton (1972) that in addition to induced growing of native plants, the aboriginal populations practiced irrigation agriculture. Knowledge of growing corn, squash, pumpkin, watermelon and gourds is believed to have diffused from Colorado River tribes rather than from Spanish missionaries (Bean and Lawton 1972:208). The Colorado River tribes irrigated their crops by means of flood agriculture, which is not feasible in inland mountains and deserts. Consequently other forms of watering would have been necessary in order to cultivate corn and squash, etc. in inland areas. Bean and Lawton (1972:201-203) suggest that other forms of watering such as conventional and pot irrigation were used by the Cahuilla. Shipek (1977:132) claims that formal irrigation was utilized by the Diegueno and Luiseno but that corn could have grown without irrigation if planted in moisture retaining plots of land. Still others argue that the technology necessary to grow corn, and other crops needing summer moisture, was introduced by Spanish missionaries to aboriginal populations.

When the Native American populations began to practice irrigation agriculture and from what source the technology of irrigation arose are unsolved controversies. Shipek (1977:136) and Bean and Lawton (1973:xxxi) suggest that archaeological investigations need to be oriented towards solving these problems. Examinations of soil for evidence of fire, pollen and plants remain studies, and the relationship between sites and plant communities are offered as a means of approaching the question of aboriginal agriculture through study of the archaeological record.

SOCIAL, POLITICAL AND RELIGIOUS ORGANIZATION

Based upon adjusted population figures Killea (1975) has estimated an aboriginal population of up to 22,000 for San Diego County. This is considered relatively accurate despite difficulties encountered as a result of two factors: population

decline and population movement. While the former was a direct result of European contact, the latter was a common feature of the aboriginal lifestyle both before and after the contact period. As hunters and gatherers, a successful subsistence lifestyle was maintained at the cost of some permanency. Populations were responsive to variation within the environment; aggregation and dispersal with corresponding ceremonial, and social activity, was closely associated with seasonal variations.

As a result of work among modern hunters and gatherers, Netting states:

> A movement of people, either temporary or permanent . . . is a quick way of adjusting group size to available resources, whether changes arose from local abundance or scarcity of food or from demographic variance among groups. (Netting 1974: 14).

Within San Diego County, principles of group cooperation and family ownership were primary factors in the relationship of man to his social environment (i.e., subsistence, and territory). In addition, three main kin-based principles of identification have been noted throughout the study area: 1) the lineage, which may, or may not be associated with a village; 2) the sib, or clan, and 3) the moiety. The "tribelet" is another form of social organization which has been noted within the San Diego region. This term was initially coined by Kroeber to indicate a political and territorial grouping distributed throughout the state, which encompasses qualities usually held by the lineage or clan. It "consisted of the aggregation of people living in two or more (often up to a dozen) separate villages, acknowledging the leadership of a chief who usually resided in the largest and most important of the several settlements" (Heizer 1978:5). Within the study area, a need for specificity in a discussion of variation results in the term "tribelet" being overly general. Although considered basically homogeneous, this discussion includes brief descritions of specific kin-groupings and notes variation in social, religious or political importance. Among all of the major tribal groupings lineage, clan, and moiety functions are considered indicative of the integrated nature of ceremonial and economic activities.

Social Organization - Kinship

Bean has noted that almost all Cahuilla social interaction occurred within the kin group. This was possible as kin relations were computed for two generations, including both lineal, and affinal connections (Bean 1972:99). The importance of these kin ties was so persuasive that the frequent Cahuilla statement "I am related everywhere" carried "connotations of pride, privilege and power" (Bean 1972:92).

Similar importance of the kin principle is found among modern Diegueno. Here, members of the partilinial kin group have adopted use of the father's name. If individuals meet who hold the same name, but cannot trace the relationship, kinship obligations of both a social and economic nature are nonetheless imposed. (Luomala 1976:251, 259.) It is assumed that the kin group held similar importance throughout the area of study.

Dieguenо residence units may reflect a pattern for the San Diego region. Consisting primarily of the parents, unmarried children, and married sons with wives and children; some of the husband's siblings, his parents, and survivng relatives of his father may also have been included (Luomala 1976:250).

The above grouping reflects the basic inter-family organization, the lineage. The lineage is an independent, unilineal and localized entity (Bean 1972:84-85) of which members trace relationship to a common creator. Although generally task oriented, the lineage is noted as performing clan functions as well.

Individual responsibility to the lineage was paramount. When children reached puberty, parents were generally responsible for choosing spouses for them. The choice was made on the basis of kin ties and economic standing. Both interests surpassed the individual in importance, establishing reciprocal economic and social ties with other groups which benefited the lineage as a whole. Importance of this relationship is both demonstrated and reinforced by the practice of the sororate and levirate. This practice, whereby, a widower preferred to marry his deceased wife's sister or kinswoman and a widow preferred to marry her husband's brother or kinsman, has been generally documented throughout the study area (Bean and Shipek 1978:556, Luomala 1978:602, Sparkman 1908:214).

The importance of the lineage and its relationship to clan organization can be demonstrated through consideration of the process which occurred when a clan split. Both the disbanding of old ties and the formation of new was organized along lineage lines (Bean 1972:90, Strong 1929:281). If the lineage head of the moving group (or secondary lineage) was not important, even though the lineage established new territorial boundaries, they would return to the parent group for ritual purposes (Strong 1929:281). This parent group was considered the founding, or original, lineage and frequently owned the office of ceremonial leader, the ceremonial house and the ceremonial bundle, although other offices were distributed throughout the secondary lineage (Bean 1978:580). If at the time of a split the family head who moved was of importance, however, the lineage might assume ceremonial activities of its own leading to the possible assumption of clan status, i.e., the formation of a new clan (Strong 1929:231).

Among the Diegueno, the lineage may have been the most persuasive integrating force prior to contact. Although rudimentary sibs or clans are noted as having been in existence, they may have assumed greater significance with the beginning of European contact (Luomala 1976:251-252).

For the Cahuilla, Cupeno and Luiseno, however, the clan, as opposed to the lineage, was probably the strongest integrative entity. Clans were usually comprised of several branches of one lineage with individuals tracing membership to a legendary ancestor in the distant past. Based on principles of patrilineality and exogamy, they were social and religious groupings (Kroeber 1925:691), which (unless small) formed independent ceremonial units (Sparkmen 1908:465, Strong 1929:283-284). As mentioned above, particularly strong single lineages could also assume clan status.

Although clans were frequently localized, (Bean 1972:84, Sparkman 1908:465, Strong 1929:263, Spier 1923:299-308); among the Luiseno (Strong 1929:276-278) and Cahuilla

(Kroeber 1925:705) members of a single clan might be represented in more than one village. Conversely, among the Diegueno (Luomala 1976) Cupeno (Strong 1929:185) and Cahuilla (Kroeber 1925:705), two or more clans might inhabit the same village. This is clearly noted for the Diegueno: "Two or more sibs (clans) might occupy the same locality in friendly fashion, ward off trespassers from it and form a settlement . . . overlapping at sib territories is not rare" (Luomala 1976:253).

As implied above, the clan also performed economic functions. They held acknowledged ownership of surrounding land (Bean 1972:44; Strong 1929:152-244), and cooperated as groups in hunting and gathering activities and ceremonial reciprocity. As a result, they were frequently economically (Bean 1972:84) and politically independent (Sparkman 1903:215, Strong 1929:152). A general lack of this independence, and a tendency towards centralization noted for the Mountain Cahuilla has been hypothesized as the result of contact (Strong 1929:152).

The moiety (two organizations into which the kin group is divided for varying purposes) was another form of sound organization common among Cahuilla, and Cupeno. Moieties within the study area are generally categorized as clan integrating, exogamous structures (Bean and Smith 1978:588, Kroeber 1925:705). Although regulation of marriage has been hypothesized as a main function, at Wilckal in Cupeno territory, Strong (1920:237) states that "if such a dichotomy were present at all, it exerted no influence on actual marriages."

Moieties within the San Diego region are associated with wildcat and coyote totems, tu'kst and isil respectively (Strong 1929:345) for the Cahuilla, tuktum in tuktam and istan or islan for the Cupeno (Bean and Smith 1978:589, Kroeber 1925:690). Although Strong (1929:337) and White (1959:126-127) note "traces" of a moiety division among the Luiseno, the principle is reported absent by Bean. Shipek (1978:555) and Curtis (1926:12).

It should be noted that the truly totemic nature of the wildcat and coyote moities is debatable. Among the Cupeno, a totem is called Wasa, or great-great-grandfather, but there is no belief in actual descent from this figure (Kroeber 1925:690). A similar situation may have prevailed among the Cahuilla.

Functions of the Cahuilla moiety system have been doucmented by Bean, who notes;

> Every Cahuilla lineage or sib was a member of a moiety. They were distributed in space so that most sibs of one moiety immediately bordered a sib of the opposite moiety. Through the institutions of ritual and marriage, subsistence goods of these various areas were distributed throughout the area as a whole, as considerable quantities of foods and goods were reapportioned to members of the opposite moiety at rituals . . . (Bean 1972: 86).

Marriage roles favoring spouses from the opposite moiety strengthened these ties (Bean 1972:86).

Although as a strict marriage regulating system the moiety system has lost some power, traces of reciprocity such as the eagle killing and image-making, practiced during the mourning ceremony, still existed in the late twenties for the Mountain Cahuilla (Strong 1925:165). Modern Cahuilla still refer to one another as kilyiw. This term implies geneological relationship, and as with the common Diegueno surname, results in mutual obligation (Bean 1972:86).

Social Organization-Political and Religious Positions

As head of a patriarchial group, the Luiseno kiket (householder) was recorded as more powerful than an average member of the kin-group (Curtis 1926: 13), and may have been included within the class of those called cimlyuke or cimiyunuenkalet, a "decision maker" (Bean 1972:104). Such individuals may have been found throughout the study area.

As mentioned previously, the clan was the most powerful social and economic integrative force among the Cahuilla, Cupeno and Luiseno. The most powerful religious and political leaders were also clan based. Bean has outlined a class-system which is applicable to the study area. The top four classes consist of: 1) nobility i.e., chiefs and their females; 2) bureaucrats, including chiefs assistants, messengers, etc.; 3) religious specialists such as shamen, diviners and cursers, and 4) specialists considered to be any "extraordinary craftsmen" in pursuits such as hunting or any of the crafts. These people are hypothesized as comprising as much as 25 percent of the population (Bean 1974:23). The following brief descriptions agree with this outline.

An important position throughout the study area was the hereditary office of clan chief: Cahuilla net, Cupeno nat or nuut, Luiseno noth, no't or female nota, Diegueno qaipai (Bean 1972:104, 1974:23, Bean and Smith 1978:589, Curtis 1926:47, Kroeber 1925:707, Sparkman 1908:215, Strong 1929:34, 293). Clan leadership was generally passed in the male line, with the eldest son succeeding his father, although among the Luiseno women could inherit if there were no suitable male heirs (Gifford 1918:206, Sparkman 1908:215, Strong 1929:293, White 1959:160).

An unusual system of inheritance was found among the Cupeno. Although clan leadership was passed in normal fashion within coyote clans, wildcat lineages passed leadership from one clan to another in succession (Strong 1929:251).

The clan chief is generally considered a religious rather than a political figure (Curtis 1926:13). Among some groups civil and religious power was obtained through possession of the ceremonial bundle, the maswut or numhut (Sparkman 1908:215, Strong 1929:165). Among the Mountain Cahuilla (Bean 1972:109, Strong 1929:163) and the Cupeno (Bean and Smith 1978:589) this power was symbolized through possession of the ceremonial dance house as his dwelling.

Among the Diegueno, the quipai was the inaugurator of ceremonies, and the official host (Curtis 1926:47). Elsewhere within the study area he was also expected to use this power in mediation of intra-clan disputes (Bean 1972:7) and in administration of

religious and economic matters (Boscana 1933:43, Bean and Shipek 1978:555). This included such duties as setting of ceremonial dates and choosing of guests, collection and redistribution of goods and gifts (Bean and Smith 1978:589), knowledge of legends, songs (Strong 1929:163), and correct ceremonial procedure. Additional responsibilities included designation of where and when to obtain food and hold first fruit rites (Bean 1972:105).

Another important ritual position within the clan was that of paha or paxaa among the Shoshonean Cahuilla, Cupeno and Luiseno, and kaponel among the Yuman Diegueno. Usually held by a shaman of repute, this position may (Bean 1972:105, 1978:58) or may not (Strong 1929:252) have been inherited. Duties varied within the San Diego region, although they primarily related to correct procedure during manet, or tolache rites (Curtis 1926:47, Strong 1929:252). The paxaa or kaponel was expected to keep order (Curtis 1926:48), act as messenger for the clan chief, relay orders and information (Bear and Shipek 1978: 555), lead in ceremonial joking, and in the blowing of souls (Strong 1929:166).

It should be noted that outside the study area, in Desert and Pass Cahuilla territory, the paxaa's duties were expanded to include organization and leading of communal hunts frequently associated with ceremonial activities, collection and distribution of food within the community, song leading, and general knowledge of ceremonial procedure. In this capacity, he was more than necessary to the manet, or taloache ceremony. Here he was a religious and administrative assistant to the clan chief, akin to the takwa or hutuovoc. (Bean 1972:105, 1975:581.)

A third ceremonial position has been documented for the study area (Curtis 1926, Bean and Shipek 1973, Strong 1929), northern Mountain Cahuilla had takwa or tahga and southern mountain Cahuilla kutuovoc, Cupeno kutvavanavac, or kutva vaas, and the Luiseno pohmutev. Strong (1929:165) suggests that this official was a general ceremonial assistant to the clan leader, while the Paha was associated solely with the tolocche cult. The takwa, kutvovoc, kutvavanavac or puhmutcvi, however, played a crucial role in all ceremonial activity, e.g., announcing, keeping order, ritualized joking, lighting of fires, and distribution of goods. It has been suggested that this position was inherited (Bean and Smith 1978:589; Strong 1929:251). A more detailed discussion of variation within this office is offered by Bean and Smith (1978), Curtis (1926) and Strong (1929). Strong notes that when the puhmutevt attends the image burning ceremony he was called paiiakut. A visiting puhmutevi presiding over the manet ceremony was termed noktomic.

The clan chief and the toloache assistant may have been members of the puvalam, or shamen (Bean 1972:113). Consisting of specialists in curing and religious functions (Barrows 1900:76), the puvalam were frequently politically active because of their influencial standing, although they were not formal officials (Strong (1929:253). When a decision was to be made that exceeded the individual, as family level, or if a decision might result in punishment, these men held special council (Bear 1972:112).

The puvalam, a ritual position held exclusively by men, consisted of two sub-groups: the piul, pa'svol or pumal and the pa'vu ul or pol. Members of the piul, acquired power through trances and used it to cure illness, foretell the future or control such

natural phenomena as the rainfall. For the latter reason, shamans were often feared as having too much control (Bean and Smith 1978:589).

Among the Cahuilla, Cupeno and Luiseno, power was predestined for the more powerful pa vu ul, or pol (Curtis 1926:32). These men could take the form of animals (Bean 1978:581, Gifford 1918:209) and kill as well as cure a person through supernatural means (Bean 1978:581).

An herbalist was another type of curer. Documented for the Cahuilla by Curtis (1926) and for the Diegueno by Lee (1937), this position was usually held by a woman. Curing ability was acquired through human innovation and accomplished without supernatural assistance (Curtis 1926:33).

Although individuals with particularly war-like attributes are not noted for most groups, White (1959:125, 160, 161) documents several for the Luiseno. The tchumu', or tuchnakut was a paramount warchief who managed inter-rancheria affairs and the associated grove management. The tushnakut pengawish was his immediate assistant, while the local no' was warchief at the village level. The pumelum is noted as a secret Luiseno war society comprised of young men. This should not be confused with the pulum, a council of shamen, generally elders.

The Cahuilla tetiwis, or tetaawis (dreamer), was responsible for location of game animals and "trespassers" on clan or lineage property as well as identification of new food sources (Bean 1972:116, Curtis 1926:33).

Important economic functions were also performed by the "chief of the rabbit hunt." Documented for the Luiseno (Curtis 1926:13, Sparkman 1908:215), and the Cahuilla (Bean 1972:104), Curtis states that the office was held for life, and may have been inherited (1926:13).

Only the most important positions were discussed in this section, although a multitude of less important figures are noted by various authors. Detailed information as to position and duties entailed can be found in Bean (1972, 1974, 1978), Bean and Shipek (1978), Bean and Smith (1978), Curtis (1926), Luomala (1973), Parker (1965), Strong (1929) and White (1959, 1963, 1976).

Ceremonies

Ceremonial activity throughout the San Diego region focused on rites of passage. Two general classes predominated: initiation or puberty ceremonies and mourning rites (Kroeber 1925). Other types of rituals focused upon either control of the environment, for example, increased rainfall and first fruit rites; or control of the future, for example childbirth rituals and the wanawut and ant ordeals (Bean 1972, Bean and Shipek 1978, Bean and Smith 1978, Kroeber 1925, Luomala 1978, Parker 1965, Spier 1923, Strong 1929, White 1963). Within the study area, an element basic to all ceremonies was group participation; on the local level the entire lineage was usually involved. Many ceremonies also brought together normally autonomous groups. Ceremonial activities were often conducted during the winter season, when

the restricted food base rendered economic cooperation between groups most important (Bean 1972). Increased religious activity at this time provided an opportunity for accompanying economic reciprocity.

The following discussion is divided into two parts: initiation rites, subdivided on the basis of gender; and mourning ceremonies, divided into six subtypes. Focus is placed upon those activities that may have left material remains. Although the discussion is brief and restricted to the major ceremonies, integration of social, religious and economic activities is illustrated.

Initiation or Puberty Rites

Toloache, or manet ceremonies were held approximately every two to three years within the study area. The four or five day ceremony (DuBois 1908:78) involved the entire lineage (Bean 1972:143), and invited guests. Introduced to the San Diego region primarily through the Luiseno, toloache rites centered around the drinking of a Datura meteoides and water mixture by adolescent males (Bean 1972:143, Bean and Shipek 1978:556, Luomala 1978:603, Parker 1965:24, Sparkman 1908:222). The solution was ground by the paxaa in the tamyush, or ceremonial mortar. Initiates were expected to fast during this period. Fasting in combination with the ingestion of hallucinogenic datura produced visions from which the boys were expected to learn various types of information important through life, e.g., the identities of future guardian animals (Kroeber 1925:669, Luomala 1978:603, Sparkman 1908:222). This was also a time for learning traditional songs and dances (DuBois 1908:78, Parker 1965:24, Sparkman 1908:222, Strong 1929:259-260).

Activity centered around the ceremonial enclosure. Feasting and dancing took place near or within the structure as did Luiseno and Mountain Cahuilla ground paintings (Bean and Shipek 1978, Sparkman 1908:222, Strong 1929:175). After instruction, the painting was covered over with dirt and thus destroyed. Burning of a section of the wamkish or ceremonial enclosure marked the end of collective acts by the initiates (DuBois 1908:84, Kroeber 1925:671-672).

Girls were initiated into womanhood by means of a ceremony lasting up to a week (Luomala 1978:603), although Strong (1929:255) states that "the duration of the ceremony depended on the amount of food to be distributed". Throughout the study area, the ceremony focused upon "roasting" of the girls. A pit was heated by fire and lined with warm stones. The girls were then placed into the pit, leaving only when it was necessary to reheat the stones (Bean 1972:143, Kroeber 1925:674-675, Sparkman 1908:224-225, Strong 1929:255). Instruction in songs, dancing, and a proper adulthood was offered to the girls throughout the ritual, which among some groups concluded with a ground painting in the ceremonial enclosure. As in the toloache ceremony, after use the painting was erased. Cupeno rites concluded with a foot race led by boys and followed by young women and the initiates (Strong 1929:257). Face paint, used throughout the ceremony was scraped from the faces of Luiseno girls and a similar design was painted onto a rock (DuBois 1908:96). This process among the Luiseno repeated for a period of several months (Kroeber 1925:675) to a year (Sparkman 1908:224-225).

Mourning Rituals

A lengthy period of ritual activity was initiated upon death of an individual. Immediately after death, food and gifts were gathered from clan members for distribution to visiting clans.

After a feast, eaten in the ceremonial enclosure, the body and personal possessions (including the dwelling) were burned (Cuero 1970:59-60, Strong 1929:264). Within Diegueno territory the body was extended with the head facing south or east before cremation. Ash and bones were placed into an olla which was either buried or hidden among rocks. Within other portions of the study area, the ashes were covered by soil (Curtis 1926:165, DuBois 1908:486, Heye 1919:19) and the grave left unmarked.

A second and third ceremonial sequence was involved with ending the deceased's ties to this world. In the first part, clothes were washed in order to banish the spirit from its familiar surroundings. Later, clothing and other possessions burned and the spirit instructed to go to the sky (Parker 1965:25). Strong (1929:265-266) states that if a clan was wealthy, Cupeno possession burning might be held within a few days of the death. Because of the expense of gifts for guests and nonrelatives, however, Sparkman (1908:226) states that it was more likely that preparations were only started at that time. Burning could be held up to one year after death (Bean and Smith 1978:589; Luomala 1978:603, Sparkman 1908:226).

The burning of images of individuals who had died since the last ceremony was also held up to one year or more after death (Kroeber 1925:675-676, Parker 1965:25-26, Strong 1929:268). Luomala (1978:603) states that this ceremony may have been a Diegueno clan's major public event that was held after "years accumulating of food and presents for the guest. The same situation prevailed in some parts of Cahuilla territory, where the ceremony was initiated when there was adequate food and valuables to provide gifts for guests, who could number into the hundreds (Bean 1972:136). Images approximately three feet in length were manufactured in as life-like a manner as possible, frequently decorated with valued ornaments of the dead person (Parker 1965:25-26). These images were burned after a dance in which they were featured. In Imperial Valley, new goods were piled into a pit or shelter and burned along with images (Luomala 1973:604). Ashes from the fire were covered over with soil (Strong 1929:268).

Eagle killing ceremonies were held annually throughout the San Diego region, primarily in memory of deceased chiefs (Kroeber 1925:675-676, Parker 1965:26, Strong 1929:261-262). The eagle was captured as an eaglet and raised in a cage within the village (Strong 1929:261-262). Although the entire period involved ritual activity, upon maturity a ceremony lasting three days to a week was held. Neighboring lineages or clans were invited and food and gifts were exchanged. On the last night the eagle was killed, ensuring perpetuation of the lineage and life after death for its members (Bean 1972:139). Among the Diegueno, the eagle's body was cremated like that of a person (Luomala 1978:604). The Cupeno and Mountain Cahuilla buried the body in the floor of the ceremonial dance house (Strong 1929:177, 262).

An unusual aspect of mourning ceremony is documented for the Luiseno. A special mourning ritual, the yunish matakish, was reserved for toloache initiates. During the

ritual the feather headress and other paraphernalia were buried in the center hole of a ground painting located in the wamkish. This ritual took place the afternoon before the image burning ceremony (Kroeber 1925:673).

The toloache cult is discussed by Bean (1978:668) as having provided the basis for one of the "two major religious subsystems developed . . . in coastal California: the Chingichngish religion among the Luiseno, Juaneno, Gabrielino, and Ipai-Tipai, or Dieguenо peoples. The religion is hypothesized as having diffused from an area near Long Beach in Gabrielino territory into the San Diego region. First accepted by the Luiseno, the God Chingichngish "provided a more explicitly moral normative order than had hitherto prevailed and enforced this order" through a group of avenging spirits e.g., rattlesnakes, bear and raven. It is important to note that despite an extended period of contact and acculturation the cult is noted as still active on some of the reservations during the 1970s (Bean 1978:669).

The brief sketches presented allow the drawing of a few broad generalizations. Ritual activity provided opportunity for exchange of food and goods among the various groups within the study area. The kin group worked together to collect and produce the goods which were distributed to guests and participants throughout the rituals. Bean (1972:150) notes that "rituals prevented extreme conflict over economically desirable areas because of the constant exchanges of treasure goods and food between groups.

Summary

The purpose of this section has been to describe the general features of aboriginal social, political, and religious organization for tribal groups within the study area. Important positions attendant to these categories were also discussed. The pattern which emerges is one characterized by broad cultural homogeneity throughout the region accompanied by minor, although not indignitiant, intergroup variation. With this pattern in mind, a few generalizations can be offered in summary.

Autonomous, exogamous, patrilineal lineages were basic to social organization while the sib, clan, or "tribelet" assumed considerable importance as well. This was particularly true where residence and leadership were concerned. Dual organization in the form of moieties was common, playing an important role in marriage regulation and some other forms of social interaction.

The residential group occupying a common territory was usually composed of a single kinship unit although it was not uncommon to find members of different lineages or clans sharing the same area and combining social, political, and religious activities. Marriages were arranged on the basis of economic as well as kinship consideration and established a strong permanent reciprocal relationship between the families and wider kinship groups of the principals. This was reflected in many ways including a widespread preference for the levirate and sororate following the death of a spouse.

Positions of leadership were commonly clan based and combined political and religious functions. Important political postions were passed from father to eldest

son in typical partilineal fashion although other lineal male relatives, and occasionally women, were also eligible. Generally a political leader was assisted by a ceremonial leader in important non-secular affairs while a number of lesser religious specialists, including shamans of both sexes, performed lesser ceremonial functions.

Throughout the region civil and ceremonial duties were combined in single offices. This was true not only for the more important political and religious positions but for those of lesser significance as well. Power in both realms could be inherited, learned, or achieved through supernatural means.

TRADE

Aboriginal trade is defined by Heizer (1978:690) as "the purchase or exchange of objects between individuals of one tribal group and individuals of a different tribal group." Intertribal trade generally occurred "either on the occasion of friendly visits as guests or participants in a ceremonial performance to which outsiders were invited or between villages of different tribes situated near the common border" (Heizer 1978:690).

Such trade was indispensible for group survival, as it allowed groups to obtain subsistence resources which were scarce or lacking in their own territory and, at the same time, to dispose of their own surplus of goods, particularly perishable items. It was only when the local group's needs were satisfied and a surplus of raw material was available that intertribal commodity exchange was possible (Heizer and Treganza 1944:298); however, Bean suggests that surplus was rather common: "at any one time a group had a surplus of one or more items which could be exchanged for others" (1972:122). Barter was the most prevalent form of trade, although the practice of purchasing goods with currency (shell beads) was also common. Free reciprocal use of one another's resources was also known (Davis1961: 8).

The earliest documented trade item is shell. "Numerous species of marine shells traveled from the Pacific shore across the Colorado Desert and River into the Southwest in prehistoric times" (Heizer 1978:691). Grooved stone axes, cotton blankets and Anasazi and Puebloid pottery are among the items traded into southern California from the Southwest (Davis 1961:2; Ruby 1970:xiv). Aside from being the earliest, shells and shell beads are also the most frequently recorded trade items in the ethnographic literature. Foods (including salt), manufactured goods (including basketry and bows), hides and pelts, and raw materials (including stone for tool-making) were also frequently traded.

A number of trails criss-crossed southern California. Some known or inferred trails have been mapped (Davis 1961; Weide and Barker 1974).

> Trade routes were along trails that ran from one village to another; or if their course was continuous . . . as through the southern California desert, the line of march lay from one tank or spring to another (Heizer 1978:692).

Rock piles and cairns, thought to represent votive shrines, have often been found along trails in southern California (Davis 1961:7; Heizer 1978:692).

Trade relations existed among the Cahuilla as well as between the Cahuilla and their neighbors. Trade occurred within kinship and ritual systems and through formal trading relationships. Cahuilla traders were paid to barter for goods with non-Cahuilla groups, particularly the more distant ones. The exchange of goods with neighboring groups or with other Cahuilla tended to take place within kinship or ritual settings. Craftsmen often made manufactured goods, such as basketry or bows, for non-artisans in exchange for goods and services (Bean 1978:582). Although raw materials and manufactured goods were generally bartered, shell money, consisting of strings of olivella or clamshell disk beads, were also used as a medium of exchange (Kroeber 1925:705). In addition to trade, redistribution of raw materials and manufactured goods was also accomplished through the presentation of gifts and through "negative reciprocity" - poaching, raiding and theft (Bean 1972:124).

Cahuilla trade relationships extended west to Santa Catalina Island and east to the Colorado and Gila rivers. Material and non-material items exchanged with neighboring and distant groups are listed in Table 1. Major trails passed through or near Cahuilla territory and linked them with coastal and eastern groups. A network of smaller trails, some of which were used for trading purposes, connected Cahuilla villages with one another (Bean 1972:74).

The Cahuilla are said to have formed an economic-military alliance with the Halchidoma (along the Colorado River) and the Gabrielino. This alliance gave the Cahuilla access to a wide range of goods, including items produced in the Southwest, such as grooved axes. Cahuilla trade with the Mohave and Yuma was apparently limited (Bean 1972:70). Cahuilla trade with the Chemehuevi seems to have been one-sided:

> There was little of advantage to the Cahuilla in the Chemehuevi territory; however, it is possible that agricultural technology or products and such things as pottery and other trade goods reached the Cahuilla by means of Chemehuevi intermediaries (Bean 1972:69).

Relationships between the Cahuilla and the Imperial Valley Tipai are said to have been hostile, although Cahuilla visits to Imperial Valley Tipai territory are reported, and the Cahuilla may have received goods or ideas such as agricultural technology from them (Bean 1972:70).

Information on Cupeno trade is extremely limited. According to Bean and Smith (1978a:588) trade with non-Cupeno groups was controlled by the head of each clan. Non-material cultural items acquired from other groups included ceremonies from the Ipai and the Chingichnish cult from the Luiseno or Gabrielino. (See Table 1.)

According to Luomala (1978:601), the Ipai and Tipai "traded more frequently with each other than with unrelated tribes; however, major intertribal trails, such as the Yuma, crossed their territory between the lower Colorado and the Pacific." Ipai-Tipai trade with other groups, such as the Colorado River tribes and the groups to the north, is delineated in Table 1.

TABLE I

TRADE AND EXCHANGE

Cahuilla

Imported from:		
Chemehuevi	conical burden baskets basketry caps	Kroeber 1908, Davis 1961, Bean 1972, Ruby 1970
Colorado River Tribes	turquoise, melons, squash, gourds, gourd rattles, corn, grooved axes, songs, concepts of pottery making and agricultural techniques	Bean 1972, 1978, Curtis 1926, Davis 1961, Ruby 1970
Gabrielino	asphaltum shatite shell beads	Bean 1972, 1978, Ruby 1970
Tipai (Imperial Valley)	possibly agricultural techniques and goals	Bean 1972
Luiseno	tourmaline	Bean 1972, 1978
Serrano	Joshua tree blossoms	Bean 1978
Exported to:		
Gabrielino	Food products, furs, hides, obsidian, salt	Bean 1972, 1978

Other: The Cahuillan exchanged rituals, songs and other non-material cultural items with the Gabrielino. Items exchanged with unspecified groups included ritual equipment, jewelry, baskets, obsidian, perishable items, fish, shells, and animal and mineral products (Bean 1972; Bean and Lawton 1965; Bean and Saubel 1972). Trade with groups not listed above, such as the Ipai, is mentioned in the literature; however, specific items of trade are not delineated.

TABLE I (Continued)

	Cupeno	
Imported from:		
Gabrielino	Chingichngish religion rituals	Bean and Smith 1978b
Luiseno	Chingichngish religion rituals	Bean and Smith 1978a
Ipai	Ceremonies	Bean and Smith 1978a
Exported to:		
Ipai	Ceremonies	Bean and Smith 1978a
	Diegueno	
Imported from:		
Cocopa	Salt clamshells	Davis 1961, Luomala 1978
Cupeno	ceremonies	Bean and Smith 1978a
Gabrielino	steatite Chingichngish cult	Bean and Smith 1978b
Tipai (Imperial)	agricultural products melons, salt, fish	Davis 1961, Ruby 1970, Spier 1923, Gifford 1931
Mohave & Yuma	Gourd seeds	Davis 1961
Unspecified groups	perishable items	Ruby 1970
Exported to:		
Cocopa	eagle feathers	Luomala 1978, Ruby 1970, Davis 1961
Cupeno	ceremonies	Bean and Smith 1978a

TABLE I (Continued)

Tipai (Imperial Valley)	seed flour, acorn flour, red and black minerals for paint, tobacco, acorns, basketry caps, baked mescal root, yucca fiber winnowing baskets, carrying nets, eagle feathers, eaglets, steatite, granite, agave fiber, juneus rushes	Davis 1961, Ruby 1970, Luomala 1978, Gifford 1931
Mohave & Yuma	Acorns	David 1961, Ruby 1970

Exported to:

Unspecified groups (desert groups and possibly Mountain Cahuilla)	Tule roots, bulbs, cattail sprouts, yucca leaves, mescal, pine nuts, manzanita berries, chokecherries, mesquite beans, elderberries, shell	Ruby 1970, Davis 1961, Curtis 1926

Other: Domestic trade between coastal and inland Tipai and Ipai groups included the exchange of acorns, agave, mesquite beans and gourds for salt, dried seafood, dried greens and abalone shells (Cuero 1968, Luomala 1978).

Luiseno

Improted from:

Gabrielino	Steatite bowls	Bean and Smith 1978b, Shipek 1977
Unspecified groups	Mesquite beans obsidian blanks or points perishable items	Sparkman 1908, Curtis 1926, Davis 1961, Bean and Shipek 1978, Ruby 1970, Shipek 1977

Exported to:

Cahuilla	tourmaline	Bean 1972, 1978
Cupeno	Chingichngish religion rituals	Bean and Smith 1978a
Unspecified groups	Shell	Ruby 1970

The San Diego County Ipai and Tipai and their agricultural kinsmen to the east, the Imperial Valley Tipai, exchanged a wide variety of items (see Table 1). Most of this trade took place during the winter (Weide and Barker 1974:33). Two trails linked these groups: one ran from Jacumba Valley, through Inko-Pah Gorge to Mountain Spring and eventually to Indian Wells; the other ran from Campo (and probably to Jacumba and San Sebastian) east to the Colorado River (Gifford 1931:8; Weide and Barker 1974:24).

Delfina Cureo, a Tipai, noted that the Tipai "used to go a long way to trade for what they needed. There were no roads then, just trails, and we walked and carried everything on our backs" (1968:33). Lucas (1978) indicated that the Cuyamaca Indians obtained pinyon nuts from Mexico through trade; the trade ceased when the individual who brought the pinyon nuts every year died.

The Luiseno maintained trade relations with neighboring groups, including the Cahuilla, Cupeno and Gabrielino. They imported mesquite beans, "a purchased luxury," (Curtis 1926:15:8) because of the scarcity of mesquite trees in the San Luis Rey Valley (Sparkman 1908:196). Steatite bowls were obtained from Santa Catalina Island (Gabrielino), and obsidian blanks or points from "northern or eastern neighbors" (Bean and Shipek 1978:552). The Luiseno exported tourmaline to the Cahuilla and elements of the Chingichngish cult to the Cupeno (see Table 1). In addition to the trade mentioned above, food supplies and treasure goods were exchanged during ceremonies. "The village giving the ceremony distributed great quantities of food and some treasure goods to all guests from the other villages attending these affairs. This network of ceremonies provided a means for redistributing food supplies from areas which had an abundance to those which had a poor harvest year." (Shipek 1977:33)

MATERIAL CULTURE

Aboriginal groups within the study area (Cahuilla, Cupeno, Diegueno, and Luiseno), were primarily hunters and gatherers. Subsistence activities occurred within territories owned by kin related groups. Encompassing diverse ecological zones, these parcels of land were laid out vertically from the desert to mountain environments for each group. This arrangement provided a broad range of resources available to each group for exploitation. The Cupeno, as owners of an especially rich mountain environment did not directly exploit desert resources. General subsistence patterns, however, paralled those of the other groups within the study area.

Because of this similarity, cultures which are represented by distinct language groups and different world views appear to be similar on the basis of technology and material culture. Attribute differences tend to be subtle, and are generally of degree rather than of kind. All groups utilized the same hunting tools and food processing implements. The basic form of these artifacts will be described, but primary emphasis is given up to discussion of diagnostic variation. It should be mentioned at this point that the description of Cupeno material culture is minimal. Very little artifactual information is included in the major references (Hill 1927, Hill and Nolasquez 1973, Landis 1976, Lummis 1902, Strong 1929, Wallace 1902), however, this

data has been included whenever possible. Where it is impossible to be specific, material culture can be assumed to be closest in type to their Mountain Cahuilla neighbors (Kroeber 1925, Strong 1929).

This section has been organized into five categories: architecture, hunting implements, milling and grinding implements, remains associated with ritual (including such diverse topics as pictographs and mortuary practices), and the utilitarian arts (basketry and pottery). Discussion will focus on the attributes of features or artifacts which are most likely to be found during archaeological reconnaissance.

Architecture

Aboriginal homes within the study area were designed primarily as protection against the elements. As a result, although several different types of dwellings were constructed in each group's territory, houses within the study area generally bear great similarity to one another.

Construction basically consisted of vertical poles pulled together, tied, and then thatched. This style of building results in two basic shapes, a gable and a dome. The domed form is documented for the Luiseno (Kroeber 1925:654), the Diegueno (Lee 1937:59-60, Luomala 1978:597), the Cahuilla (Barrows 1900:38, Bean and Lawton 1965:8), and the Cupeno (Landis 1976:5). The basic tent shape is recorded for the Diegueno (Kroeber 1925:721, Spier 1923:338-339), the Cupeno (Hill 1927:6), and the Cahuilla (Kroeber 1925:707). An unusual gabled form noted for the Pala area in Luiseno territory (Drucker 1937) is rectangular in shape. This structure had both corner and support posts, in addition to crossed rafters (Kroeber 1925:654).

A similar rectangular style for the Cahuilla is a subject of debate. Having a size of approximately ten to twelve feet, the Cahuilla structure had four crotched corner posts and an additional forked pole situated on each of the shorter sides. These six poles were sunk several feet into the ground (Curtis 1926:22). Three ridge poles connected the posts; one on either of the long sides, and one running down the center. Perpendicularly placed short rafters connected the side beams to the center pole (Curtis 1926:22). This may be the form referred to by Bean and Lawton (1965:8), as a later structure, "probably influenced by the Mexican jacal, . . . rectangular and set on forked posts".

Earth covering of a structure was probably decided by questions of permanency and season. Both the presence, and the lack of such covering is documented for all groups (Barrows 1900:38, Bean and Lawton 1965:8, Curtis 1926:22, Hill 1927:6, Kroeber 1925:654,721, Landis 1976:5-7, Lee 1937:59-60, Luomala 1978:597, Spier 1923:338-339). Some Mountain Kumeyaay dwellings were roofed in bark and sided in pine slabs (Luomala 1978:597). This would have been heavier than tule covering, and may have provided the same warmth as an earth cover.

Floors for all the above structures may, or may not have been excavated. Depressions of approximately two feet are recorded for the Luiseno (Kroeber

1925:654, Sparkman 1908:213) and the Cupeno (Hill 1927:6). "Slightly sunken" floors, or "scooped out hollows" have been recorded for the Diegueno (Luomala 1978:597), and the Cahuilla (Bean and Lawton 1965:8). Forms without true excavation, but having support poles set into the ground approximately 20 to 30 centimeters, have been noted for the Diegueno (Spier 1923:338-339), and the Cupeno (Landis 1976:5). Kroeber (1925:654) and Sparkman (1908:212-213) mention that Luiseno structures were often built without excavation.

Orientation of doors in a cardinal direction is questionable. They do not seem to have been postioned by the Diegueno (Kroeber 1925:721, Lee 1937:59-60), at least for the dome shaped structures (Luomala 1978:597). Spier (1923:338), however, wrote that the door always faced east, and Luomala (1978:597) mentions that doors in the gabled dwelling faced the "ritual direction", east. Landis's informants stated that the position of the door depended on wind direction, and that in Cupeno territory it generally blows east to west. Doors were, therefore, positioned on northern and southern exposures (Landis 1976:7).

Presented as fortresses, stone enclosures have been documented within the study area (May 1975, Shields and May 1969). A Kitchen Creek excavation revealed a house form with poles hypothesized to be necessary support for the thatched top (Minor 1975:40). Full understanding of age and other possible uses of these enclosures have not yet been determined.

A questionable part of the aboriginal house complex is the jacal, located throughout the study area. Barrows (1900:38-39) describe these structures as ranging from a freestanding rectangular shelter of palm fronds to complexes comprised of several rooms. Although he felt that assuming the jacal to be an introduced form would be a "hasty generalization", he noted that "facts might suggest that the round structures . . . are the only abodes of native origin" (Barrows 1900:39). This agrees with Kroeber (1925:703), who assumed that the jacal was a Mexican introduction. This structure should be considered apart from the ramada. Defined as "a thatch-roof extending out from the house and supported on posts and timbers" (Curtis 1926:22), this may be part of the aboriginal house form.

Some clues are provided for the general location of Luiseno and Cupeno dwellings. Sparkman (1908:220) remarks that Luiseno houses were frequently located away from springs as a position too close to the water tempted the wrath of the spirit who lived there. In Cupeno territory, house locations were on gentle slopes with trees thus insuring both proper water drainage and shade (Landis 1976:5).

Archaeologically, there is some problem in locating previous house sites. As documented for the Diegueno (Luomala 1978:597, Spier 1923:338), summer dwellings could have frequently been shady areas under trees. In coastal and desert areas, the night wind could be avoided by digging "a shallow depression in the warm sand" (Davis 1969:80). Finally, previously used house sites were often avoided because of the possibility of ghost related illness (Luomala 1978:597). There is no reason to believe that similar conditions did not exist throughout the study area.

Some archaeological evidence to suggest habitation, however, should remain for an extended period. Luomala (1978:597) has mentioned that some Mountain Kumeyaay passed the winter in caves. Evidence in the form of smoke blackened ceilings helps support this hypothesis. For those areas in which floors were excavated, house depression or post holes should be discernable. Possessions of an individual were ritually burned after death by all groups. Cuero states: "We had to burn everything that belonged to [her husband] or that he used, or made while he was alive...the grass house and every thing" (Cuero 1970:59:60). This ceremonial burning should result in an ash lens and carbonization of inset posts.

The village sweat house was used for curative purposes (Hooper 1920:357) and enjoyment (Barrows 1900:77, Curtis 1926: 23). The Diegueno form is recorded as having been smaller, but higher than a dwelling, with a center resting "On four posts set in a square" (Kroeber 1925:722). The Luiseno structure is similar in size, but rests on two crotched posts and a ridge log. This is the same form used by their Shoshonean neighbors, the Cahuilla. It is described as a somewhat oval structure approximately ten feet in length (Barrows 1900:77), and up to 12 feet in height (Bean and Lawton 1965:8). A description by Curtis (1926) supplements this information. After excavation of approximately two feet:

> The forked posts [were erected], which extended five or six feet above the bottom of the pit, one at the rear, the other a short distance from the front wall. They supported a beam, on which rested the upper ends of a series of poles extending from the ground at the edge of the excavation. Against the upper end of the front post, which stood back from the edge, leaned the tops of two sloping beams, the feet of which rested on the ground about thirty inches apart. These formed the entrance. The roof was covered with brush and dirt (Curtis 1926:22-23).

In contrast to the dwelling, sweat houses were frequently located immediately adjacent to either a spring or stream (Barrows 1900, Hooper 1920, Parker 1965), although there were exceptions (Curtis 1926:23).

There exists a broad range of variation among the features discussed as ceremonial structures. Cahuilla ceremonial forms are best documented. If archaeologically investigated, the remains of a Cahuilla Kishumnawet (Bean and Lawton 1965:8) or kis-amnawut (Curtis 1926:23), should indicate a slightly excavated circular shape with perhaps some slight walling (Bean and Lawton 1965:8). Constructed of a circular wall of brush, the structure was approximately four feet in height and 25 feet in diameter. A "conical roof of beams and poles thatched with brush is supported on forked posts at the corners of a square and a fifth in the center" (Curtis 1926:23). The form is identified by Curtis (1926) as the house in which mourning rites were held. This suggests that it may be the "dance house" referred to by Strong (1929). Ceremonially killed during the mourning ritual, an eagle was frequently buried in the dance house floor (Strong 1929:177).

Curtis mentions that "sometimes only a brush corral is built, and modern practice favors communal cermonial dwellings surrounding an uncovered plaza, in which the

dancing takes place (Curtis 1926:23). It is possible that this is related to the Luiseno and Cupeno Wamkish, and was an older form that he assumed. The wamkish enclosure consisted of a round fence of brush woven through stakes approximately the height of a man. There was an opening to the north (Kroeber 1925:655, DuBois 1908:77), and narrow openings for dancers were located on either side of the enclosure.

The impermanent nature of the wamkish structure suggests that little archaeological evidence would remain of its presence. In a large village, however, a wamkish which was in constant use could result in an identifiable compacted floor. As in the Mountain Cahuilla dance house, an eagle may have been buried within a Cupeno wamkish structure at the conclusion of a mourning ceremony (Strong 1929:262). It is also possible that ash may be present at a Luiseno wamkish site. DuBois (1908:84) states that part of the wamkish was burned with great ceremony at the close of the Mani, or Toloache rituals.

The Diegueno also used a ceremonial brush circle. This fence surrounded a leveled dance floor, and was supported by a circle of rocks (Luomala 1978:597). During the image burning ceremony, a special half-circle shelter was constructed. This structure was open to the east and faced the dance circle (Luomala 1978:597). Also documented is a rectangular flat roofed jacal-type which was occasionally walled (Lucca 1978, Wonale 1978:597). As part of this structure was burned after use, an ash lens and post holes may remain.

Although is is reported outside the study area, another structure should be mentioned. Discussed by Hooper (1920:358) as a Cahuilla "clubhouse", the tomekish appears to have been relatively permanent, and somewhat larger that the structures discussed above. It is variously reported as having been used for community gatherings, communal sleeping on cold nights, and storage of all ceremonial objects (Hooper 1920:358).

Although granaries cannot be described as structures that result in features, they are included because of their relative size and permanency.

Granaries of all groups generally conformed to the description given by Barrows (1900:52). Consisting of a basket coiled from a thick rope of twigs and leaves, the form's neck and mouth are approximately ten inches across. Both height and diameter of a granary is approximately thirty inches. These were sealed with sandstone slabs or weighted baskets, and either placed on top of a nearby boulder (Barrows 1900:52), or on a raised platform of wood (Barrows 1900:52, Curtis 1926:26, Luomala 1978:597). Seeds, pods, and nuts could be stored an entire season in these structures.

Agave

Agave roasting pits may result in ash associated with isolated stone features forming "dish-like" depressions (Lee 1937:13-19, May 1976b:65).

In a description of Diegueno agave roasting, Lee (1937), notes that a deep pit is dug, lined with rocks , and then filled with sage which is burned. As the fire burns down,

the mecsal is placed into the pit, and hot stones set on top of it. This was then covered with brush and earth, with another tier built above. This was left for a period of over 24 hours (Lee 1937:19).

Ethnographic information suggests that correct performance of the agave roasting process required isolation. If the roast was witnessed by another individual, the product was spoiled, and could not be used (Lee 1937:13-19).

Milling and Grinding Implements

Rectangular slicks, the deeper bedrock metate, and portable granite slab metates are documented throughout the study area (Kroeber 1925:passim, Spier 1923:335). These were primarily used for the crushing of seeds into flour, although they were also used to grind meat and bones into a paste for soup. For the most part, they have been worn by a circular motion resulting in an oval depression (Curtis 1926:27, Kroeber 1925:696). Some show evidence of having been worked with a back and forth motion. Kroeber (1925:696) suggests that this may be due to the grinding of wheat, and, therefore, be of historical origin, as is the presence of the three-legged Mexican metate.

Manos, the metate grinding implements were usually water worn cobbles used either with, or without reshaping. Most manos were of the Diegueno type; primarily ovoid in shape and used with a rolling motion (Spier 1923:335). The Luiseno assemblage also included unifacial, bifacial, and wedge-shaped forms (McCown 1955:18). This is similar to the Cahuilla assemblage, where squared manos are also documented (Barrows 1900:54, Kroeber 1925:696). Usable only with a back and forth motion, these forms correspond to use patterns on some of the metates. Speaking generally about a portion of the study area, True (1970:48) has commented that shallow grinding slabs and manos are more "common in the Cuyamaca territory than in the San Luis Rey area", where mortars are more frequent.

Both portable and bedrock mortars are located throughout the study area. In addition to vegetable processing, they were utilized for the pulverizing of small animals prior to cooking, and the fine grinding of venison prior to storage (Sparkman 1908:197-198, White 1963:125). Wooden and bone points were sharpened against these pitted boulders (Lee 1937:202, White 1963:125).

Portable mortars were initially hollowed out approximately two or three inches and then worn deeper (Kroeber 1925:697). Hoppers, the basketry edges used to contain the flour in a newly started mortar, were used by all groups until the depression was deep enough to hold the flour with little loss (Barrows 1900:53, Kroeber 1925:653,697,700).

Although primarily a desert Cahuilla product, a wooden form may be found within the study area. This type was imbedded into the ground before use, as was the Diegueno stone mortar (Kroeber 1925:697,722). Curtis (1926:25) states that mesquite wood was used, and that the mortar was hollowed by fire to approximately half its depth of two feet.

Elongated water worn stones of approximately ten inches (Barrows 1900:53), were used as pestles, frequently without modification. These stones may be identified by the smoothing of one end which occurred as the stone was used (McCown 1955:19). Kroeber (1925:697) noted that occasionally the cobbles were slightly dressed, resulting in a "club-like shape" (Lee 1937:91). Longer pestles were required for the Cahuilla wooden mortars, of perhaps two feet in length, and may have also been of mesquite (Curtis 1926:25). Dressing was required to lessen weight, and resulted in an especially slender form (Kroeber 1925:697).

Hunting Implements

As members of a hunting and gathering economy, groups within the study area supplemented a primarily vegetable diet with meat products. Bows were a primary hunting implement for groups within the study area. Generally four feet in length (Curtis 1926:25; Hooper 1920:358; Spier 1923:350), they were thickest in the middle and most slender at either end. Although the inner face of the bow was cut flat, the outer face remained as rounded as the original surface. The Northern Diegueno are noted for having wrapped parts of the bow with sinew to retard splitting. (Curtis 1926:45, Spier 1923:350).

All groups manufactured bows of mesquite or willow (Curtis 1926:25; Hooper 1920:358; Kroeber 1925:704; Sparkman 1908:205; Spier 1923:350). Bows were also made from palm leaves by some Cahuilla groups (Kroeber 1925:704), of Mountain Ash by the Diegueno (Spier 1923:350), and of both elder and ash by the Luiseno (Sparkman 1908:205). Bowstrings were manufactured of both fiber and sinew; but materials varied by area. Agave fiber is noted by Hooper (1920:358), milkweed by Lee (1937:16) and Spier (1923:350) and dogbone, milkweed or stinging nettle by Sparkman (1908:206). These were usually two-ply in strength; although due to European influence other plys may have been utilized (Sparkman 1908:203). Cahuilla sinew bowstrings were manufactured from portions of the mountain sheep (Curtis 1926:25); it is possible that other groups also made use of this animal for bowstrings.

There were two basic arrow types, single or two-part construction. The single sharpened stem was fashioned of wormwood (Kroeber 1925:704) or arrowweed (Curtis 1926:25 Spier 1923:352). Two-part arrows were of cane with greasewood foreshafts (Curtis 1926:25, Sparkman 1908:205) or of arrowweed with foreshafts of chamise (Spier 1923:352). Arrows varied in length from approximately two feet with a nine-inch foreshaft (Sparkman 1908:205) to approximately three feet in length (Curtis 1926:25).

Although there is agreement of the presence of feather trimming, form is variable. Hooper (1920:358) mentions a short, three feather trimmed arrow, used for long distance shooting, although long arrows with two-feather trimming appear to have been the most common type. For the Cahuilla and Diegueno, arrows were trimmed with hawk feathers from the wings or tail (Curtis 1926:25). Spier (1923:352) notes the Diegueno favorite was brown chicken hawk, although black hawk feathers were also used. Feathers from other species were referred to as being "of little use" by Spier (1923:352). Luiseno arrows were also three-feather trimmed, however, informants

differ as to whether they were of hawk species (Sparkman 1908:205), or from "any bird" (Tac 1835:93). Finally, the shaft may have been painted between the feathers (Drucker 1937).

Affixed to the arrowshaft, projectile points were used by all four groups for the hunting of large game animals and feuding activities. As with the rest of the arrow, materials used were diverse. Many points were manufactured of obsidian of which the only easily accessible source is on the southeastern edge of the Salton Sea (Heizer and Treganza 1922:315). Quartz was a favorite material of the Luiseno, and may have been mined from an area near Pala. "Flint" was used frequently by the Cahuilla (Curtis 1926:27). General use was also made of silicious material (agate, chert, chalcedony, etc.) and the metavolcanic materials (rhyolite, andesite, etc.).

Projectile points within the study area have been categorized on the basis of such attributes as weight and size, straightness, concavity or convexity of the side and based portions, notching, and triangular or leaf shapes (Meighan 1954, McCown 1955, Treganza 1942, True 1966, 1970).

Specimens commonly represented in and near the study area include Desert Side-Notched (General, Delta and Sierra subtypes) and Cottonwood (variants a,b,d) points. For detailed comparative discussions of types within San Diego County, and their associations with the greater southwest, see True (1966, 1970).

A preference for side-notching by the Diegueno (Spier 1923:352) may be of use as a diagnostic trait when compared with Luiseno types (True 1970:45).

Arrowshaft straighteners were used throughout the study area, although degree of dependence upon the form varied. Barrows (1900:50) mentioned that the Cahuilla straightened arrows with their teeth, but grooved straighteners and polishers of ground steatite were also noted for the Cahuilla by Kroeber (1925:704) and Curtis (1926:27). Luiseno arrowshaft straighteners are recorded as having been transversely groved stones, flatish in shape (Curtis 1926:159) or oval in shape and incised (Drucker 1937).

Information is most complete for the Diegueno. Straighterners of vertical or rectangular shape with flat bottoms, rounded tops and a single groove are documented for the mountain area. Also noted are straighteners with parallel upper and lower surfaces and either double, or multiple groves. These forms may, or may not be incised, and are usually of steatite (True 1970:38-39). Steatite seems to have been the preferred material although clay forms were also recorded (Spier 1923:351). The quarry closest to all groups is located near the mouth of Carrizo Gorge at Jacumba within Diegueno territory (Heizer and Treganza 1922:308).

Flat, curved throwing-sticks of approximately two feet in length were used for the hunting of rabbits and other small rodents (Kroeber 1925:652, 817; Sparkman 1908: 198, Speir 1923:337), and also of birds such as duck or quail (Curtis 1926:9).

Thick cylindrical war clubs noted by Lovell in 1854 (Heizer 1974) and Kroeber (1925:704) may have also been used in game hunting. Spier(1923:354) notes that these clubs were either spiked or notched on the convex edge for the Diegueno.

Scrapers were widely used, and are frequently documented archaeologically. Although scrapers frequencies are higher within the Cuyamaca complex (True 1970:48), cortex based scrapers may be used as a diagnostic trait for the Luiseno as they appear to be absent from the Diegueno tool kit (True 1970:80).

Populations within reach of the sea supplemented a vegetable and meat diet with large quantities of fish. Curved haliotis shell was frequently formed into a hook (Curtis 1926:9; Kroeber 1925:652; Sparkman 1908:203). Cactus needles were also used, by fire-softening the spines into the correct shape, and then barbing by making incisions near the point (White 1963:126).

Remains Associated with Rituals

This section addresses items which are either: 1) features or artifacts associated with ceremonial activities (e.g. toloache mortars or pictographs), or 2) regular and unusual placement of artifacts.

Some of the most outstanding evidence of aboriginal occupation in southern California consists of rock art. Most petroglyphs within the study area belong to the Southwest Coast Style described by Clewlow (1978:622-623), which is primarily characterized by the presence of angular elements. It is suggested that the style originated approximately 2500 BP and continued approximately 1,500 years, ending as the Southwest Coast Painted, or pictograph style arose (Clewlow 1978:622-623).

Colors and elements of these pictographs may be used as diagnostic traits. Within Luiseno territory, colors are limited to red and black, with the former being dominant (True 1954:68). Hematite (a red color source) is documented for northern San Diego County (Heizer and Treganza 1972:309) and Strong (1929:295), remarks on general availability of the iron oxide at "springs." The black paint was most probably a manganese based product; a deposit of which is noted at Jacumba (Heizer and Treganza 1972:310). DuBois (1908: 96) states that the female puberty ceremony was conducted in a series of stages, each stage being marked by the introduction of a new design element. A design was painted on the face of the girls with red, black and white pigments. Subsequently the paint was scraped from their faces and used in the painting of pictographs. A similar process took place at the conclusion of the boy's ant ordeal. Again, designs were painted in red and black (DuBois 1908:92). Cupeno girls also participated in pictograph painting, producing rectangular red designs of iron oxide (Strong 1929:255).

Zig-zags and geometric forms are most common, while animal figures are extremely rare. The existence of human figures is questionable, as possible representations are highly stylized. Circle and snake forms are absent from the San Luis Rey Basin (True 1954:68-71). Although primarily found in Luiseno territory, the style does run slightly into Diegueno and Cahuilla territory (Hedges 1970 Chapter 5:4).

Diegueno pictographs are qualitatively different from other California workings. They are also separable along Ipai and Tipai, or Kumeyaay lines. The Diegueno Rectilinear Abstract style is defined by the presence of abstract fret designs ranging

from simple linear to maze forms. These are found in the northwestern Ipai territory adjacent to the Luiseno; centered in Green Valley between Escondido and Poway (Hedges 1970 Chapter 7:8). Hedges suggests that the style may be an elaboration of the Luiseno technique, and that use of red paint may be tied to the Chinigchinich cult (Hedges 1970 Chapter 6:7).

South of this area is the Diegueno Composite style. This is defined by the presence of both abstract and representational elements, including human and reptilian figures, sunbursts, circles, and rectangular grids. These paintings are in red, black, white and yellow colors. As for the Luiseno paintings, Hematite for the red dye may have been obtained at any of several "mineral springs" in San Diego County, and also near the mouth of Carrizo Canyon (Heizer and Treganza 1972:309). Substance (manganese) for the black paint may have been obtained from either Black Butte on the U. S./Mexico line, or Jacumba, within San Diego County (Heizer and Treganza 1972:310). Designs of this type occur in a large part of Diegueno territory on both sides of the international boundary. Although the style was produced from approximately A. D. 1000 to 1900, it is postulated that such work couldn't survive for more than the last half of that period, even in protected shelters (Hedges 1970: Chapter 8:4). It should be noted that an anthropomorphic figure is also documented within Couger Canyon, in Cahuilla territory (Meighen 1959:33).

Several types of mortar were manufactured and utilized for ceremonial purposes. Luiseno examples are best documented. Paint for the puberty ceremonies and pictograph workings may have been crushed in specialized mortars. These are described as having been polished, close to perfectly round (Sparkman 1908:207) and well-finished. Pestles used for paint manufacturing are also described as being neatly shaped (Kroeber 1925:653).

The toloache mortar, tied to the Chingichnich cult, is identified as small, symmetrical, polished, and occassionally grooved on the outside (Kroeber 1925:653, Sparkman 1908:207). Luiseno toloache mortars may have been painted red, white and black (DuBois 1908: 77, 78).

As a last example, "rain rocks" (Fritz, Knight and Gothold 1977, Heizer 1953) have been documented within the study area. True (1970:17) has described these as miniature mortars approximately two inches in diameter by a half an inch in depth.

> There is a tendency to find these depressions in clusters. Some are located on nearly vertical rock faces which seems to eliminate their use as anvils or paint mortars . . . some possible ritual use might be suggested . . . (True 1970:17).

Burial procedures within the study area may also leave archaeological evidence. Among the Luiseno, Cahuilla, and Cupeno, the body was laid into a shallow grave and burned; ashes were buried in the same spot (Curtis 1926:165; DuBois 1908:486). Although the site does not seem to have been marked in any particular fashion, an ash lens may be evident. Diegueno cemeteries, however, are qualitatively different. They may be recognized by fragments of charcoal, broken metates (Heye 1919:19), and especially by the use of funerary ollas. After burning, all bones were placed into

a small olla which was then filled with ashes and charcoal. Davis (1921:96) states that the olla was put into the deepest part of the cremation pit. Waterman (1910:305) reports that it was either "put away in some hidden place among the rocks or buried on a hillside". The olla was sometimes covered with a small inverted bowl (Davis 1921:96, Heye 1919:15, 1921:96); and sometimes with a sherd or haliotis shell" (Heye 1919:15). One olla has been located with a clay pipe at the mouth of the jar (McKinney 1972:39). Broken metates were sometimes inverted (Davis 1921:97), or placed one above the other (Heye 1919:16, 1921: 97) over the burial site of an olla. Polk (1972:13) reports an exposed cremation located during the Cottonwood Creek excavations. This had been marked by a mano.

Finally, the following miscellaneous observances should be noted as they are mentioned in the literature and may have a bearing on archaeological investigations:

1) Within Diegueno territory, projectile points were placed under rocks and trees on the periphery of both camps and villages (Spier 1923:315).

2) Sucking tubes used in curing practices and manufactured of steatite are noted for the Diegueno (Polk 1972:19). This is diagnostically interesting as True (1970:54) states that evidence for the working of steatite is absent for the Luiseno. The Diegueno mine may have been located in Carrizo Gorge within San Diego County (Heizer and Treganza 1972:308).

3) Within Luiseno territory, oddly placed small boulders may be reminescent of the practice of erecting stones wherever a bear or mountain lion was killed (Sparkman 1908:199).

Utilitarian Arts

Coiled and twined implements common to all groups within the study area include products for cooking, portage, food preparation, storage, and wearing apparel (Barrows 1900:40-45, 51-52, Bean and Shipek 1978:553; Davis 1967:60; Hooper 1920:359; Kroeber 1908b:45-47; 1925:658; Sparkman 1908:204; Spier 1923:342-343).

Baskets were generally coiled in a clockwise manner, worked as the basket maker looks into the basket, although small baskets appear to have been worked from the outside (Drucker 1937). The end product has been generally described as heavy, but regular. Barrows (1900:45) notes that finished products were strong, long lasting, and that frayed portions were easily replaced. Weave varied by group and individual artist. Ten to twelve wraps of sumac or rush to each inch was the norm for the Luiseno. The average Diegueno weave was approximately 15 stitches to the inch, although 67 stitches to the inch has been documented (Davis 1967:60). Baskets were sometimes so tightly woven that they could be used for water storage (Hill 1927:6, Tac 1835:101).

Two-ply articles are the most usual, although three and four-ply goods have been noted. This latter may have been due to European influence (Sparkman 1908:202-203). Most twined products within the study area, such as sifters, were manufactured

with the weft at a forty-five degree angle. This contrasts with the Diegueno twined form which has a weft in a distinctive inverted "V" shape (Elsasser 1978:63).

It is possible that prior to commercialization of the art, few design elements were used by any group within the study area. This is suggested by Davis (1967:60) for the Diegueno. Natural shade differences of red, brown, olive and yellow in the rush, sumac or elder produced a mottled design (Barrows 1900:42, Kroeber 1925:698). Black was obtained by dying the natural fibers (Kroeber 1925:698). Design patterns include bird, leaf and animal figures for the Luiseno, with an occasional solid black or brown basket (Sparkman 1908:204). Encircling horizontal bands have been noted for the Diegueno (Waterman 1908:273), and for the Cahuilla (Kroeber 1925:698); although birds, animals, and representations of natural elements (e.g., clouds and lightning), have also been noted for the latter by Bean and Lawton (1965:7-8). Barrows (1900:43) discussed the presence of both human and domestic animal figures.

A distinctive Diegueno product is the basketry carrying cap. Somewhat conical in shape, the women's cap was constructed of diagonal twine, while the man's cap was coiled. These traits distinguish Diegueno caps from those used by their Cahuilla neighbors, whose caps were uniformly coiled and flat-topped (Kroeber 1908b:43-45).

Soft textiles such as milkweed sacks and wallets are documented for the Diegueno. (Kroeber 1925:722). Clothlike fiber textiles from milkweed, mescal and nettle are also mentioned for the Cupeno (Hill 1927:6). In conjunction with this product, it is interesting to note that in 1902 the Cupeno were manufacturing saddle blankets of Spanish Bayonet or yucca (Lummis 1902:477).

Heating stones may be noted for all groups in conjunction with cooking areas. These are flattish stones of oval shape, which occassionally have holes bored through one end (Parker 1965:18-19; Sparkman 1908:208). Used for cooking, they were first heated, and then placed into the basket, along with the substance to be cooked (True 1966:52).

Ceramic forms produced by the Cahuilla, Cupeno, Diegueno and Luiseno include bowls, dishes, wide and constricted mouth ollas, and ladles (Bean and Shipek 1978:553; Grant 1903:37; True 1966). Sparkman (1908:201) added caps, spoons and plates to the existing inventory, although these may be solely historic forms. Miniatures are reported for the Diegueno, these were frequently small versions of implements they would use later as adults (Shipek 1966, True 1970:59).

Within the San Diego region, pots were constructed using coiling, followed by paddle and anvil technique. Core shades vary from black, gray or tan for the Luiseno, to gray, brown or red for the Northern to brown or tan for the Southern Diegueno. All three groups used quartz, mica and feldspar as temper, although the latter was considered "rare" among both Diegueno groups. Evler (1959:42), describes Luiseno ware as brown, Northern Diegueno as ranging from reddish-brown to brown, and Southern Diegueno as tan, reddish-brown and brown. It is suggested that the Luiseno's similarity to Northern Diegueno ware may have been the result of acculturation (Evler 1959:41).

Use of both fine and gravelly clays has been documented for the production of these items. Hooper (1920:359) reports both types as having been found in "the mountains"; Barrows (1900:46) has reported that the mountains were the source for coarser clay, while the finer sort is located in the desert. Clay deposits in San Diego County are documented for the slopes of Palomar Mountain, Mason Valley, Manzanita, the Borrego Valley, Dos Cabezas Springs, and both Spring and Jewel Valleys (Heizer and Treganza 1972:319).

Tempering appears to have been variable, and where conflicting data exist, may indicate either personal discretion of the manufacturer or trade. Use of crushed sherd tempering is reported for the Cahuilla (Curtis 1926:27). Sand (Davis 1967:61, Spier 1923:343), or finely crushed rock (Kroeber 1925:722) seems to have been prefered in Diegueno territory, although Davis (1967:61) does mention "finely-ground pieces of old olla." Color has been variously described as red (Kroeber 1925:702), as dark brown with reddish-brown fireclouding (Rogers 1936), and as brown (Spier 1923:348). Resulting from amount of use, Tom Lucas (1978) reports that pots have characteristic color stages, ranging from red to brown. The wall form is considered comparatively thin but hard by Spier (1923:348), and documented by Hill (1927:6) and by Kroeber (1925:702) as also thin-walled but fragile.

Most pots were started by hand smoothing of clay over the bottom of an already formed pot, and then completed by paddle and anvil technique (Davis 1969:190; Kroeber 1925:722; Lee 1937:41-44; Sparkman 1908:202). It has been postulated, however, that small jars could have been made totally by hand (McCown 1955:38).

Lee (1937:41-44) has documented Diegueno pot making. Dry clay is first crushed to powder on the metate. After it is very fine, the powder is sifted on a winnowing tray, lumps being reground on the metate. It is then mixed with water to form a smooth clay. This is patted into a "large flat cake", and molded around the base of an old olla. A strip of clay is then rolled between the fingers and pressed into the olla base. When this base is large enough it is removed from the old form. Coils are pressed into the correct shape on the outside with "a little wooden paddle and on the inside with a short clay paddle". The product then is set to dry for up to two to three days, after which it is fired in a pit lined with stone. This account agrees with Hooper's (1920:359) description of Cahuilla pot making on all but a few points. She discusses "a small smooth stone curved on one side and known as paikwal", used instead of the clay paddle, and also mentions a "wooden paddle." After it has the desired size and shape, it is smoothed down with the paikwal and with the hands, which are first dipped in water" (Hooper 1920:359).

It should be noted that on the basis of analysis for Martinez Canyon, King (1974:11-14) reports a lack of evidence for the hand smoothing described by Hooper. It is not clear whether this is a localized trait, or whether hand marks were erased by the paikwal. Hooper also documents the drying of a pot for only one day and a one-day firing period. Decoration, if desired, was painted on prior to baking (Hooper 1920:359).

The most frequently documented decorative patterns and colors are similar for all groups within the study area, being primarily line and triangle motifs with acute

angles. These angles were filled in with ochre. In addition to the linear elements scollops, circles, and chains of diamonds, circles and loops are noted for the Diegueno (True 1966:231-233). Red ochre only is mentioned by Hooper (1920:359) and Spier (1923:348), although a yellow ochre is also noted (Bean 1978:579, Kroeber 1925:702). It has been suggested that the Luiseno may not have painted their ware (Rogers 1936; Sparkman 1908:202). Such decoration is recorded as "recent" in the Pala area (Drucker 1937). However, sherds decorated with a reddish-brown paint (red ochre) have been recovered by McCown (1955:38), and the painted line decoration previously mentioned is discussed by Bean and Shipek (1978:553) and Kroeber (1925:653, 702). Several sources for red ochre, (hematite) in the San Diego, Imperial and San Bernardino counties are mentioned by Heizer and Treganza (1972:317). Kroeber (1925:792) discusses a rare black Cahuilla pottery "said to have been produced with black mineral; the surface is more highly polished and the lines finer . . .". This could be manganese, found in the Jacumba Valley, San Diego County (Heizer and Treganza (1972:317).

Controversy surrounds the discussion of other decorative modes. Rogers (1936) mentions Luiseno rim notching and rare instances of incising; which was accomplished by means of either a finger or a stick (Bean and Shipek 1978:553). This is supported by field data; McCown (1955:38-39) mentions that although the percentage of marked sherds is small, instances of incised cross-hatching, wavy lines on the shoulder, and fingernail impressions along the rim are documented. These traits were initially hypothesized to delineate Luiseno and Cahuilla territorial boundaries as Rogers (1936:22-23), states that the Mountain Cahuilla used no incising. Drucker (1937), however, reports that both Mountain and Pass Cahuilla did incise. Although King (1974) notes incised and rim-notched sherds from Martinez Canyon, he is unable to draw a conclusion. They "may be either Luiseno trade items, local copies of Luiseno practice, or indigenous" (King 1974:7). Basket impressed sherds are found in Diegueno territory (True 1970). Although they are also noted within Luiseno territory, True (1970:52) states that they are most likely Diegueno trade items.

Besides the controversial basket impressed sherds, True (1966:231, 233) states that the following traits may serve to identify Diegueno work: pottery rattles, miniature vessels and small ceramic effigy forms. Although "relationships between the two regions . . . are not clear, " True (1970:51) notes that some figurines found in Luiseno territory may in fact be Diegueno.

A Luiseno form of note is "legged" pottery. At least one person is documented as having manufactured and utilized this style, the sorcerer Awkuta Poklao. It is suggested that this vessel, filled with poison and placed in the rocks above Molpa village, may have been responsible for abandonment (White 1963:132-133).

The Diegueno pipe may also be a distinguishing trait; both between language families and also between Diegueno sub-groups. In terms of frequency and type, pipes are not common to the Luiseno (True 1970:50); when found, they represent straight and bow styles. Rogers (1936:50) and Spier (1923:48) agree that the straight tubular pipes found are not Diegueno. Stone pipes are not used by the Diegueno (Spier 1923:48) although they play an important role among the Luiseno (DuBois 1908:78). Within Diegueno territory , the "bow-pipe" form, a curved tube with a flange handle, seems

associated with Northern Diegueno territory (True 1970:49). A second style, a pipe with the bowl at right angles to the stem has also been found in Northern Diegueno territory (Townsend 1960:259) but has been described by Spier (1923:348) as being more properly Kumeyaay (Tipay, or Southern Diegueno).

HISTORY

This report provides an overview of the historical resources of inland San Diego County. Important historical events, figures and patterns are described, as well as the areas where they took place. The core of this report is a discussion of the cultural ecology of four peoples who successively inhabited inland San Diego County, the Native Americans, Spanish missionaries, Mexicans and Anglo Americans. Three chronological periods are identified, Spanish Mission (1769-1834), Mexican Ranch (1834-1846), and Anglo American Hinterland (1846-Present); the Anglo American period is further divided into four phases.

Although it is organized chronologically, this report emphasizes the relations between each culture and the distinctive natural environment of southern California. In southern California, this relationship has been dominated by the need for the scarcest resource, water; in inland San Diego County irrigable valleys have also been in short supply. The technology of water utilization has, therefore, been emphasized. Each of the cultures used distinctive subsistence methods, which are described in detail. The economy and settlement patterns of each period are also discussed. While subsistence, technology, economy and settlement patterns are emphasized, political, social and biographical history is discussed where relevant.

In addition, the specific requirements of the BLM have been taken into account. Material culture is emphasized because the BLM has to deal with physical remains located on its lands. Late nineteenth and early twentieth century history is discussed in greatest detail because remains dating from this period are the most likely to be found on BLM lands. Finally, because the BLM has identified the McCain Valley study area as requiring special attention, cattle ranching and settlement in that area has been discussed in greater detail.

The BLM study areas, the Otay-Hauser Mountain study area, the McCain Valley study area and the Inland Valley study area, are located in what is referred to as inland San Diego County, which is located to the east of the urbanized coastal areas of the County. While the history of the entire inland County has been researched, references are generally made only to events that took place within the BLM study areas. Thus, the history of the areas lying between El Cajon and Cameron Valley along Interstate 8 have not been emphasized.

While inland San Diego County has its own local history, it has also been a part of the Spanish Empire; the Mexican Republic; the West, the Southwest and Southern California. It is also the hinterland of the city and bay of San Diego. Although this overview focuses specifically on the BLM study areas, more general discussions have been provided where necessary for understanding its history within a broader context.

In order to make this report useful as a guide to historical resources, an attempt has been made to identify general patterns distinctive to the history of inland San Diego County. These patterns are illustrated with examples drawn from the local history of the area. Given the scope of this report - four cultures, two centuries and a variety of environmental settings - some of these generalizations represent simplifications and selections among varying interpretations. An overview such as this one simply

cannot do justice to the full richness of local history. The reader must, therefore, keep in mind that the local history of inland San Diego County is even more complex than has been indicated in this report.

While primary documents have been used, reference is made primarily to secondary sources, including published documents. With a few exceptions, most published county histories emphasize the history of the city of San Diego. For this reason, numerous local histories and theses, many of them unpublished, were consulted; these are aavailable in local libraries and historical societies, particularly the San Diego Historical Society Library at Serra Museum. Newspaper articles provided valuable historical details. Oral history was another valuable source of information. Transcripts of interviews with local residents were examined. Several knowledgeable residents were interviewed. Specific references are noted in the text itself, but additional sources on particular topics can be obtained by consulting the annotated bibliography.

In addition to the narrative, several additional sections have been prepared: an introductory description of the natural setting; a series of thematic chronologies; discussions of social history and research orientations; two maps; tables on population, post offices, agency-designated historical sites and Native American habitation sites; a selected list of documents; and the annotated bibliography.

The following abbreviation are used in the report:

OHA	Oral History Association Interviews, Instructional Media Center, Grossmont Community College
OHP	Oral History Project Interviews, San Diego Historical Society Library, Serra Museum
SA1	Study Area 1, Otay-Hauser Mountain Study Area
SA2	Study Area 2, Inland Valley Study Area
SA3	Study Area 3, McCain Valley Study Area
SDHS	San Diego Historical Society

ENVIRONMENTAL SETTING

The history of southern California has been clearly shaped by its natural setting. Basically, southern California is a coastal, subtropical, Pacific coastal plain. It is bordered on the north by the Transverse Ranges and on the east by the Peninsular Ranges. Its climate (See Bailey 1966; Griner and Pryde 1976) is determined primarily by the subtropical high pressure system of the north Pacific, which produces a relatively dry, mild Mediterranean climate along the coast and a desert in the "rain shadow" east of the mountain ranges. The mild Mediterranean climate, which is found in less than 3 percent of the earth's surface, has been the primary incentive for

settlement in southern California, but the desert to the east deterred overland immigration until after the railroads traversed it.

In San Diego County, there are five variants of this characteristic Mediterranean climate. The coast is semi-arid and cool; this is where most of the present population is concentrated. The Inland Valley study area and most of the Otay-Hauser Mountain study area is characterized by a Mediterranean climate with a hot summer. The McCain Valley study area, the western slopes of the Peninsular Ranges (Lagunas, Cuyamacas) are characterized by a Mediterranean climate with a cool summer. The eastern slopes are semi-arid, and the desert floor is arid.

Annual rainfall varies correspondingly. It is low (about 10 inches) along the coast. In the Inland Valley study area it averages between 10 inches and 20 inches per year. On the mountain slopes it averages 20-40 inches, and to the east of the mountains it drops off quickly to five inches and below. These variations determined the nineteenth century subsistence patterns. From the 1770s to the 1880s, most farming was done in the areas near the relatively wet mountain slopes.

Rainfall averages, however, obscure another of the basic characteristics of the southern California climate: recurrent droughts and floods. Before the water resources began to be managed and exploited through developed technology and capital, settlement was made precarious by years without sufficient rains and by devastating flash floods. In the nineteenth century there were droughts in the early 1840s, in 1856-7, 1863-4, the early 1870s, 1887, 1898-1905; notable floods came in 1861-2, 1883-4, 1891 (see Burcham, 1956; California Department of Water Resources 1949; Crouch 1915; Lynch 1931; Troxell 1957).

The nineteenth and early twentieth century land developers of San Diego County recognized that the storage of water was crucial to the development of the county. They were confronted by two basic problems. One was to store the runoff of heavy rains for the coming drought. This meant that relatively large (and strong) dams had to be built. Many of the county dams were repeatedly enlarged; several were destroyed by floods (see Fowler, 1963). The other problem was to bring water from the mountainous inland watershed to the coastal regions where most of the population lived. In 1889, this was accomplished by constructing a wooden flume between San Diego and Cuyamaca Lake. In 1947, after San Diego's demand for water exceeded the capacity of its local reservoirs, an aqueduct was constructed to bring water from the Colorado River.

San Diego County history has also been influenced by its physiography. On the one hand, it had a fine bay; on the other hand, unlike the Los Angeles Basin, for example, its irrigable valleys were relatively few in number and small in size. The Peninsular Ranges to the east were rugged, difficult to traverse and poor in mineral resources. Together, these features have resulted in a bay without a hinterland. Economic development has been slow, and the two incentives for settlement in San Diego County, its climate and its bay, were not developed greatly until the twentieth century.

HISTORIC THEMES

Spanish Mission Period, 1769-1834

Missionaries

San Diego County was once part of the northern borderlands of the Spanish Empire in North America. The coasts of California were first explored in 1542 by Juan Cabrillo, who discovered San Diego Bay, and half a century later by Sebastian Vizcaino. But because the trade winds made the seaward passage difficult and because the northwest of New Spain (present-day Mexico) was not heavily populated, California was not colonized until late in the eighteenth century (Bancroft 1884, I: 97-104).

The colonization of California was made necessary by the threat the English and the Russians made to the Pacific coast flank of silver-rich New Spain (Pourade 1960, I:97). In order to supply a colonizing expedition of soldiers and Franciscan missionaries, a port was established in 1767 at San Blas, located on the mainland of Mexico east of the tip of Baja California. Baja California, colonized earlier by Jesuit missionaries, served as the land base for the colonization of California. Ships moved up the coast from San Blas while the main group of colonizers traveled by land up the Baja California peninsula. A mission at San Diego was consecrated on July 16, 1769. (Bancroft 1884, I; 110-139; Engelhardt 1920:3-22, 25; Killea 1975:152-154).

As Herbert Bolton (1917) showed, the mission was the "frontier institution" by which the Spaniards colonized the large Native population of America. Soldiers and missionaries had spearheaded the expansion of the Spanish Empire ever since the reconquest of Moorish Spain (Archibald 1978:172-3). In California the missionaries followed a well established method of colonization, the object being the establishment of a Spanish-American colony whose economy was based on local resources, agriculture and stock-raising, cottage industries and Native American labor. The colonization was a practical matter and not a purely religious one, and its motivation was political; even the missionaries acknowledged this (Chapman 1921:188). In exchange for their efforts the missionaries were financed by the Spanish Crown and a special Pious Fund (Campbell and Moriarty, 1969).

In San Diego, the missionaries proceeded to establish a chapel, a presidio (military fort) and plant crops of wheat and maize (the first two crops failed due to flood and drought). The mission itself was relocated after a few years to place it in a more easily watered location. Conversions began to be made, and a mission community of Native Americans was established. Although the mission community attempted to be self-sufficient, its survival depended greatly on the yearly supply ships that made their way up the coast from San Blas (Engelhardt 1920:25-56).

The missionaries established Western agriculture in California. They brought with them Mediterranean crops adapted to the climate of California. These included wheat and barley, citrus fruits, olives, grapes, pomegranates, onions, lentils and other crops (Raup 1959:58-61; Webb 1952:52-59, 84-99). They also brought with them the technique of irrigation that had been learned from the Moors during their occupation

of Spain (Green 1943:22; Raup 1959:59-60). The missionaries eventually built a masonry dam above San Diego Mission, as well as an elaborate aqueduct system to bring water to the mission gardens (Green 1933:15, 16, 28). This dam, however, apparently could not be relied upon, for most of the mission's crops were raised nearer the mountains, where rainfall was more abundant (Green 1933:13; Killea 1975: 198). Most mission fields were irrigated with water collected at small earth-and-brush dams and diverted in zanjas (ditches).

The Spanish colonizers immediately recognized that California possessed excellent pastures (Bard 1961; Burcham 1956; 1961). Cattle and other stock was also introduced by the missionaries. In 1769, stock had been collected from the missions of Baja California, and additional stock were brought over from Sonora by Juan Bautista de Anza in 1776 (see Bolton, 1930).

Until the 1860s, cattle was southern California's primary source of wealth (Cleland 1941:4-41; Webb 1952:168-87).

In San Diego County, mission cattle were gradually grazed further and further inland. At first, the San Diego Mission cattle were grazed at nearby pastures. By 1780, they had been moved upstream on the San Diego River to make way for expanded agricultural fields. By the early nineteenth century they were grazed at Poway (SA2), Rancho San Bernardo (SA2), Santa Maria Valley (SA2), and at Valle de San Jose (SA3) (Green 1933:13; Killea 1975:202-3; Webb 1952: 168-87).

Explorations

Soon after the founding of Mission San Diego, the first explorations of the inland county were made by Pedro Fages, who crossed the Peninsular Ranges into the Colorado Desert to the east. In 1772 Fages discovered the Native American trail that led through Oriflamme Canyon to Carrizo Creek and the desert floor (see Figure 3) (Rensch 1955:194). In returning from a military campaign in the Colorado River area, Fages used this trail again in 1782 (Pourade 1960 II:48, Rensch 1955:200). In 1785 Fages also explored a southern pass through the mountians at Jacumba (Bancroft 1884, I:554-55).

In 1795 the missionaries conducted their own explorations of inland San Diego County. Father Juan Mariner and a military escort headed by Captain Juan Pablo Grijalva went north and inland in search of a mission site between Mission San Diego and the newly founded coastal mission at San Juan Capistrano. They visited the valleys of Santa Maria (SA2, Ramona), Pamo, San Jose, the Volcan Mountains, and Pala and Pauma, returning via the San Luis Rey River to the coast (Bancroft 1884 I:553, 563 (note 29); Engelhardt 1920, 1921; Hill 1927 27-33, 187-91).

During the explorations, conversions were made among the Native Americans. However, no inland mission was actually established. Mission San Luis Rey, the second mission to influence the Native Americans in the BLM study areas, was founded a few miles from the caost in 1798.

By 1800, inland San Diego County was relatively well known. The San Diego District Map of that year showed that in the south, county was known as far east as Jamul and

FIGURE 3

TABLE II

EARLY ANGLO AMERICAN TRANSPORTATION ROUTES, SAN DIEGO COUNTY*

Date Used**	Name (& Map Abbreviation)		Pass Used
1854-1858	U.S. Army/Birch Mail Route ("Jackass Mail"; Fages Trail 1772, 1782)	USA/BM	Oriflamme Canyon
1846-1868	Southern Emigrant Route (formerly Sonora Route)	SE	Warner's Pass
1846	Army of the West (Kearny) (Southern Emigrant Route, San Pasqual Road)	AW	Warner's Pass
1847	Mormon Battalion (Cooke) (Southern Emigrant Route, El Camino Real)	MB	Warner's Pass
1854-1865	San Pasqual Road (First County Road)	SP	Warner's Pass
1858-1861	Butterfield Overland Mail Company Route (Southern Emigrant Route)	BO	Warner's Pass
1858-1861	Butterfield Connection	BC	--
1848-1875	Alternate Eastern Route	AE	Jacumba Pass
1851	Lyon Route (U.S. Army)		Jacumba Pass
1865-	Smith-Groom County Road	SG	Jacumba Pass
1870-	San Diego-Fort Yuma Turnpike Company Toll Road	SD-FY	Jacumba Pass
1871-	Wilcox Toll Road (Julian-Banner)	WT	--
1874-1878	Atkinson Toll (later Mussey) Road (Foster-Ramona)	AT	

TABLE II (continued)

Sources: Menzel, 1943; Meyer, 1975; Moore, 1956; Peterson et al., 1972; Pourade, 1963; Rensch, 1955; San Diego County Patent Maps; San Diego County Planning Commission, 1938; San Diego County Plat Maps; San Diego Union; Telfer, 1951; Willey, H.J., Official San Diego County Road Map, January 4, 1880.

Notes: * Because nineteenth century maps are not very accurate, the mapped location of these routes is approximate.

** Several of these routes were used during the Spanish and Mexican periods. The dates presented here refer to their principal period of use during the Anglo American period. Those with no termination dates later became county roads.

"Potrero" (east of Cottonwood Creek, SA1) in the south; and Santa Ysabel, Agua Caliente and San Felipe in the north (Bancroft 1884, I:650).

Mexican Independence

During the second decade of the nineteenth century revolutions against the Spanish Empire broke out all over America. The California supply ships were prevented from sailing after 1810 (Bancroft 1884, I:197), and the Franciscan missions were forced into economic self-sufficiency. During the revolutions, the Spanish prohibition of foreign commerce was ignored, and a trade in hides and tallow was developed (Bancroft 1886, II:202; Burcham 1956:225; Senan 1962:59, 76, 115; Webb 1952:188-203).

In the San Diego area, the missions at San Diego and San Luis Rey expanded their activities, establishing ranchos (stock ranches and agricultural fields) and asistencias (subsidiary missions) in the back country. The asistencias were small-scale versions of the coastal missions, the difference being that the missionaries did not live there but made periodic visits. At these asistencias the Native Americans could be introduced to Western culture without being far removed from their native villages. By 1810, a granary had been built at Pala (SA2; Engelhardt 1921:20; Bancroft, 1886, II:347); it subsequently became a full-fledged asistencia (Engelhardt 1921:35, 36, 51). Mission San Diego established an asistencia at Santa Ysabel in 1818 (Quinn 1964:6).

Agriculture flourished at these inland establishments. In 1813, the annual report of Mission San Diego reported that all of its crops had been harvested in the moister valleys east of Santa Maria (SA2, Ramona); in 1815, all but 200 fanegas (Spanish bushels) had been harvested outside the mission (Killea 1975:198). After the establishment of the asistencia at Santa Ysabel, crop production immediately doubled at Mission San Diego (Killea 1975:198).

In 1821, Mexico became independent of Spain. In California, the Spanish missionaries retained control. The principal consequences of Mexican independence were economic. Trade with foreign merchants, which had been prohibited by Spanish law, was conducted openly. The hide and tallow trade, which had developed during the revolutionary period, was expanded (Bancroft 1886, II:202; Burcham 1956:225; Senan 1962:59, 76, 115; Webb 1952:188-203). In 1822, even before the first Mexican governor arrived in California, the Franciscans had signed a commercial agreement to sell their hides and tallow to an English firm based in Peru (Bancroft 1886 II:476; Ogden 1927). The trade was subsequently monopolized by the Boston hide droghers. In effect, California became a colony of New England, supplying leather to its factories; tallow was shipped to the candle factories of Peru (Ogden 1929).

Soon after Mexican independence, overland routes between southern California and Arizona were established. In San Diego County, Santiago Arguello discovered what came to be known as Warner's Pass, and a trail through it served briefly as an official mail route during the early 1820s (Bean and Mason 1962:83-99; Beattie 1951:18-20; Lindsay 1973:54). During the 1830s, the Warner's Pass route was used by Mexicans coming to California from Sonora (de Mofras 1937, I:174); by Thomas Coulter, an English scientist (Bancroft 1886, III:406-7), and by Anglo American fur trappers who came to California primarily to buy (or steal) mules.

In 1828, the Patties came to the San Diego area via lower California (Bancroft 1886, II:163; Pattie 1905). In 1831, David Jackson, Jonathan Warner and others came to the area through Warner's Pass and left the next year with a herd of mules (Hill 1927:95; Hudson 1964:76; Lindsay 1973:55). During 1833-34 a similar expedition led by Ewing Young arrived (Hill 1927:95-98). Mountain men such as these reopened the land routes into southern California, which would be heavily used during the Gold Rush (Pourade 1960, II;151-167).

Native Americans

When the missionaries arrived, what is now San Diego County was inhabited by Yuman-speaking Dieguenos (Kumeyaay, Tipai-Ipai; Luomala 1978:594-7) and Kamia (Gifford 1931) and Shoshonean-speaking Luisenos (Bean and Shipek 1978:557-62) and some Cahuillas (Bean 1978:583-6), as well as a small group of Cupenos (Bean and Smith 1978:589-90). These Native Americans lived in permanent, seasonally occupied villages, which the Spaniards called rancherias.

Particularly among the coastal Luiseno and Diegueno the missionaries introduced the Catholic religion; the Spanish language; western grains, fruits and vegetables and stock of all sorts; tools such as plows, carretas (wagons) and scythes; as well as a whole range of techniques, including irrigation agriculture, stock-raising, carpentry and adobe-making (see Tac 1952). To a great extent, the mission system came to depend on the forced labor of Native Americans (Cook 1943:21:91).

The missionaries also introduced social changes, most particularly the position of capitan (leader) and its variants. These appointed leaders served as mediators between the two cultures and also to supervise Native American labor. What is not known for certain is the degree to which the innovations changed Native American society. Shipek (1977:172) and Bean and Shipek (1978:558), for example, suggest that particularly among the Luisenos; the missionaries simply added another hierarchical level to their society, rather than radically altering it.

The adverse effects of mission activities were most strongly felt by the coastal Dieguenos and Luisenos, some of whose populations were absorbed into the mission communities. It was here that the Native Americans most easily contracted the diseases for which they had no immunity. The spread of these introduced diseases is discussed by Cook (1943 21:23-33).

In southern California, death rates were relatively low (Cook 1972:71). According to Shipek (1977:69), most of the natives under the control of Missions San Diego and San Luis Rey, in contrast to those of northern missions, were allowed to live in their own villages, because enough food could not be produced by the missions. The natives thus escaped the high mortality rate that was caused by aggregation (Cook 1943 21:23-33).

Inland Native Americans, particularly the Tipai and the Cahuilla, avoided contact with the missionaries (Bean 1978:583; Luomala 1978:595). The Franciscans did not venture as far as the territory of the Kamias east of Jacumba (Gifford 1931:83). The

missionaries were also unable to make many converts or establish asistencias among the populous Diegueno villages on the western slopes of the Cuyamaca and Laguna Mountains (Hayes 1934:141, 144, 145, 147). Aboriginal culture was thus preserved longer among the inland southern Kumeyaay bands (Luomala 1978:595).

While some natives entirely avoided the missionaries because of their location, others resisted missionization by escape and/or rebellion (Cook 1943a:21:57-64). At first the missionaries had waited for converts. Later, the missionaries actively sought them, and finally, after around 1800, they used force; this intensified the tendency of the Native Americans to escape (Cook 1943a 21:74-83). The forced labor, upon which the mission system depended, also led to escape and other forms of resistance (Cook 1943a 21:99; Phillips 1977).

Though rebellions were frequent, most were small or abortive (Cook 1943 21:6472). The great exception was the attack on mission San Diego of 1775, which involved from 40 to 70 rancherias throughout the county (Bancroft 1884, I:253-4; Geiger 1955: 160-71; Luomala 1978:595; Rivera y Moncada 1967, I:429-81; Tibesar 1956, II:449-458). According to Cook (1943 22:66):

> The rapidity and intensity of this response designates these Yuman Indians as being endowed not only with considerable energy and drive, but with unusual perspicacity in recognizing the (as yet) hidden dangers of missionization.

The natives also resisted missionization by not learning Spanish "as rapidly as could be desired" (Cook 1943:21:144) and of course by refusing to give up traditional religious beliefs and social organization (Bean and Shipek 1978; Luomala 1978; Shipek 1977).

• Estimated Native American Populations

Native American population size at contact has been the subject of much controversy. Kroeber (1925) did not trust the missions' records, and thus his population estimates were relatively low. Since his time, much work on the aboriginal population has been done by Cook (1943, 1972), but his work refers mainly to central and northern California. Cook revised Kroeber's figures upwards, but not significantly for southern California.

Killea (1975) reviews the most recent research on the San Diego region population. She (1978:78) defines the region roughly as San Diego County, with a northward projection to the Santa Ana River. Her estimates are based on historical sources, but she also takes into account the work of Dobyns (1966), White (1963) and Shipek (unpublished at the time, but see 1977). While Kroeber's estimates for the San Diego region was 8,500 and Cook's 9,200, Killea's estimates range from 15,000 to 19,200 (pp. 199, 310). The coastal areas contained a great portion of the Native American population. These estimates are in agreement with those presented by Bean and Shipek (1978:557-8) and Luomala (1978:596). Given the discrepancy between these figures and the earlier population estimates, further research is clearly needed.

• Subsistence

Another controversial aspect of Native American culture that may have been masked by missionization is the extent to which the aboriginal Native Americans practiced planned agriculture. For the historian, the extent to which the Native Americans were familiar with agriculture prior to contact is important in evaluating their response to the introduction of mission agriculture.

The fact that maize agriculture does not seem to have developed in southern California has been attributed to the lack of summer rains favorable to its cultivation and to the extensive reliance the Native Americans had on acorns (Bean and Lowell 1973:xxxviii). Although some investigators (e.g., Gifford 1931:22; Treganza 1947b: 169-71) have suggested that some form of developed agriculture may have been practiced by the Native Americans of San Diego County, little evidence for this has been found.

Shipek (1977:124, 129), however, proposed that the Native Americans of the San Diego County region regularly planted a now-extinct wild grass. Early explorers and missionaries made extensive references to the cultivation of a large-seeded wild grass (Bean and Lawton 1973:xxi, xxxii-xxxiii), although the extent to which it was relied upon is not known. Shipek (1977:129) suggests that it was the widespread cultivation of this wild grass, rather than the gathering of acorns that restricted the cultivation of maize in southern California. Supporting of the hypothesis that the Native Americans were familiar with developed agricultural techniques are early examples of fields supposedly cultivated by Native Americans. In 1772, for example, just three years after the missionaries arrived in San Diego, Father Luis Jayme reported that there were Native American fields at a rancheria near Mission Bay (Killea 1975:137). Fernando de Rivera y Moncado (1967 I:242) reported that in 1776 he came across a well-planted, fenced milpa (field) north of San Diego. However, these could have been planted under the supervision of the missionaries (Dr. J. Moriarty, personal communication, July 7, 1978).

While proof of Shipek's assertions on the regular cultivation of a now extinct wild grass is currently lacking, there is ample evidence of other types of so-called proto-agricultural practices. There is evidence, for example, that the Native Americans may have made use of fires not only in rabbit hunts and for curing materials, but for promoting plant growth, clearing fields and improving oak stands (Aschmann 1959:34, 38, 41, 40; Bean and Lawton 1973:xxi, xviii-xxiii; Lee 1937:48; Lewis 1973; Shipek 1977:117-8). According to Shipek (1977:95, 120, 121), the Dieguenos and Luisenos also transplanted cactus and other plants. Further, she notes that the missionaries did not transform the native subsistence patterns but merely added new knowledge, techniques and crops. Aboriginal acorn-gathering and wild plant harvesting activities were, in fact, quite similar to some of the activities introduced by the Spanish missionaries (Shipek 1977:172). There is no doubt that the Native Americans were expert exploiters of the natural resources of the land; they may have also sowed and transplanted wild plants. But the irrigation agriculture, Mediterranean crops and metal tools introduced by the Spanish missionaries constituted a superior subsistence technology. Although Native Americans made their own adaptation to Spanish missionary culture, its appearance was an important event in the history of southern California.

Mexican Period, 1834-1846

Californios and Anglo Americans

Although California had become part of Mexico in 1821, the truly Mexican period did not begin until after the Spanish missions were secularized, and their lands and power were acquired by the civilian population. The missions had been formally established as transitional institutions, but the Franciscans had actively resisted the granting of lands to private citizens and maintained control of the best farming and grazing lands of California (Archibald 1976; Servin 1965). Secularization acts had been enacted in 1813 (Bancroft 1886, III:200), but they were not put into effect until the early 1830s (Bancroft 1886, III:305-8, 325, 331). By 1834, the missions were assigned civilian administrators, their stock were taken away (or slaughtered for quick sale) and the mission natives dispersed. Some missionaries remained, but the missions themselves deteriorated.

The secularization of the missions left California largely in the hands of the children of the pioneer colonists. Most of these colonists had been born in Baja California and in mainland Mexico, but their children were born in California and came to be known as Californios (Pitt 1966:ix). Although a handful of ex-soldiers acquired ranchos (cattle ranches) in the Los Angeles Basin as early as 1784 (Avina 1932:22, 32), most Californians did not possess their own ranchos until after secularization (Lugo 1877:78). In inland San Diego County privately owned ranches were slow in appearing. None had been granted during the Spanish period. The earliest land grant in the county was made in 1823; this was Los Penasquitos (SA2; Avina, 1932:38; see Figure 4). Jose Antonio and Magdalena Estudillo received Rancho Otay (SA1) in 1829 (Avina 1932:39). In 1831, Pio Pico was granted Rancho Jamul (SA1; Avina 1932:40).

During the 1830s the San Diego area was largely deserted (Bancroft 1886, III:609-12). The Native Americans, including the Colorado River Quechans, had been making repeated raids in the county since 1824 (Bean and Mason 1962:61-62; Hayes 1934:143). By 1837, San Diego's entire military force had left, and most of the Californios were driven to Los Angeles and San Bernardino. The Picos' Rancho Jamul adobe at the confluence of the Jamul and Dulzura Creeks was burned down (Ellison and Price 1953:64-8; Pourade 1963, III:29-31). Although Valle de San Jose (SA3) had been granted in 1836, by 1842 it was abandoned due to Native American raids (Hill 1927:144).

After secularization the Californios and others who inherited the mission lands devoted themselves primarily to cattle ranching; even the Anglo Americans were almost exclusively ranchers (Van Dyke 1886:157). Agriculture was so neglected that flour had to be imported from northern California (Lugo 1877; 90; Sanchez 1928, 20 (9):17). The relatively undeveloped San Diego County ranches contributed little to the total hide and tallow production of California. In 1840, it was estimated that while the Los Angeles Basin exported $100,000 in cattle products, the San Diego region contributed only $10,000 to this total (Leader 1929:108). Because of this, the grazing lands of the San Diego region lasted longer than those of the Los Angeles region.

FIGURE 4

Further land grants were not made until 1840, when San Jose del Valle was regranted to Jonathan Warner, the former fur trapper (Hill 1927:144). Vallecitos de San Marcos (SA2) was also granted in that year (Avina 1932:59) and Jamacha (SA3) in 1841 (Avina 1932:59-60). The rest of the inland ranchos, Pauma, Rincon del Diablo, Santa Ysabel, Cuca, Cuyamaca, Guejito, Santa Maria El Cajon, Canada de San Vicente and Valle de San Felipe were granted by the last two Mexican governors of California, Manuel Micheltorena and Pio Pico. (see Avina 1932; Brackett 1939; Moyer 1969; Rush 1965).

While most of the ranches of the county were granted to Californios, several were granted to foreigners with Mexican citizenship, including Warner, Joseph Snook, a former English ship captain, and Edward Stockes, who with his father-in-law J. J. Ortega, was the recipient of Ranchos Santa Maria and Santa Ysabel. That San Jose del Valle was granted to Warner was typical in that the ranches located in the desert passes of San Bernardino Valley, were also occupied by Anglo American ex-fur trappers; these were apparently the only men willing to cope with the constant threat of Native American raids from the desert (see Beattie 1951).

The general history of the San Diego County ranches is relatively well known, particularly those owned by Anglo Americans (see Hill 1927). Summary descriptions are found in Brackett (1939), Moyer (1969), and Rush (1965). Because life on these San Diego County ranches was similar to that of other southern California ranches, descriptions such as Gillingham (1961) are quite useful. Because many of the Mexican (and Spanish) records were burned during the San Francisco earthquake and fire and because the Californio ranchers kept relatively few records, the details of San Diego County ranches are not well known. However, it must be remembered that although these Californio ranches are important to the cultural history of inland San Diego County, none of these ranches became part of the public domain.

Native Americans

During the Mexican period the Native Americans continued to provide southern California with its labor. In the Los Angeles area they worked as ditch diggers, cowboys, adobe makers, servants, crop pickers (Phillips 1977; Wilson 1952). There was some intermarriage with Mexicans as well as with a few Anglo Americans (Dakin 1939; Engelhardt 1921:162; Wrightington 1878). During this period there was also a migration to Los Angeles, the commercial center of the hide and tallow trade (Phillips 1977).

Most San Diego County Native Americans continued to occupy their native lands, living in villages at Cuca, Pauma (SA2), Pala Santa Ysabel (SA3), Cupa (SA3) and San Pasqual (SA2). (see Appendix F). All but San Pasqual had been under varying degrees of mission control. San Pasqual was established as an experiment in self-rule by Governor Echeandia in 1835 (Bancroft 1886, III:624-5, 628; Engelhardt 1920, 1921:121-2; Rustvold 1968:60).

Although the "legal relationships (between Native Americans and Mexicans) were always poorly executed" (Sutton 1965:95), Native Americans at some of these villages were accorded a certain amount of protection by the Mexican government. Native Americans at San Pasqual were protected from encroachment throughout the Mexican

period, and those at Pala succeeded in resisting Pio Pico's attempt to graze his cattle there (Engelhardt 1921:121-2). The Cupenos at Cupa maintained their village at the hot springs even though they were part of Warner's rancho. In fact, many of the ranchos were located at Native American rancheria sites (Phillips 1975:47-70; Shipek 1977:179).

At these villages, they planted wheat, maize and other crops, maintained the vineyards and orchards first planted by the missionaries, tended cattle and other animals, and also continued to gather acorns. Some lived in adobe houses and the ones at Cupa had fireplaces (Strong 1929:184). In 1849, Couts noted, "The Natives are far ahead of the common ranchers of the country" (Couts 1932:4). Other Anglo Americans reports provide further descriptions of these communities.

Anglo American Period, 1846-Present

Cattle Country Phase, 1846-1867

California was invaded by United States troops during the Mexican War of 1846-8. The acquisition of strategic Pacific ports and California lands was one of principal objectives of the war (Price 1967:36, 37, 91). At the time, California was practically defenseless, as it had been throughout its history, and the Californios quickly surrendered to the United States Navy in July of 1847 (Bancroft 1886, V:232-3). Several overland military detachments were also sent to California. Among these was General Stephen Kearny's Army of the West, which arrived in San Diego County in December, 1846.

In Santa Fe, Kearny had left the Mormon Battalion under the command of Lt. Philip St. George Cooke, assigning them to build a wagon road to California. Kearny went on ahead with a detachment of cavalry. On December 6 Kearny's men met a group of mounted Californio lancers under the command of Andres Pico at San Pasqual Valley (Pourade 1963, III:97-116; Rustvold 1968:80-84, 136-148; Woodward 1948).

The Battle of San Pasqual has been the subject of much historical debate, mostly because the United States Army was badly outmaneuvered by the Californios, who were reputed to be weak fighters. The battle could have been avoided, because Pico had not intended to fight Kearny (Woodward 1948:20). But as Woodward (1948:25) concluded, Kearny was "spoiling for a fight". Early in the morning of December 6, 1846, Kearny led his tired men into San Pasqual Valley, apparently expecting the Californios to flee. Instead, he lost eighteen men. The next day, the battle continued at Mule Hill. Although the battle site is a noted historical landmark, the battle itself had few significant consequences. The Anglo Americans may have lost the battle, but they won California.

- The Gold Rush

The War with Mexico was formally ended with the signing of the Guadalupe Hidalgo Treaty in February, 1848. Less than two weeks before it was signed, gold had been discovered in northern California. The resulting gold rush transformed California.

Up until then California had been peopled mainly by mexican Californios and Native Americans, although a small number of Anglo Americans lived among them. After the discovery of gold, the primarily north-south trickle of people that had entered California was replaced by an east-west mass movement of Anglo Americans (Meining 1971:22), who rapidly imposed their numbers and their culture on the land.

Most of the gold seekers came to California via northern trails. Particularly during the winter, however, when the northern passes were blocked by snow, the gold seekers used the southern routes across the Mojave and Colorado Deserts. The route across the Colorado Desert, known variously as the Gila, Colorado River, Sonora and Southern Emigrant Route, entered San Diego County through the Carrizo Corridor, San Felope Valley and Warner's Pass. This was the route that had been used by Kearny's Army of the West and Cooke's Mormon Battalion (Cooke 1849; Peterson 1972; Woodward 1948). Cooke's Mormon Battalion had widened Box Canyon in making the route into a wagon road of sorts.

The first prospective gold miners to use this route were Sonoran Mexicans, who subsequently used San Carlos and San Gorgonio Passes instead (Bieber 1937; Guinn 1909-10; Dixon 1964; 17; Lindsay 1973). The route through Warner's Pass became the principal Anglo American entry into southern California. From this pass, gold seekers proceeded north via Oak Grove and Aguanga.

Descriptions of this route can be found in numerous sources (cf., Bartlett 1854; Bieber 1937, 1938; Chamberlin 1945; Chase 1919:223-71; and Emory 1848:136-148; Dixon 1964, and Edwards 1961, contain excellent bibliographic guides to these accounts).

The Gold Rush changed San Diego County. To some extent it was depopulated, but the local economy of the areas near the Southern Emigrant Route, particularly that of the Native Americans, were stimulated by the sales of supplies to the overland travelers (Shipek 1977:188-96). More significantly, the Gold Rush revolutionized the cattle industry of southern California. Whereas cattle could be previously sold for less than $5, the demand for beef at the northern mines drove the price up astronomically. The cattle ranchers of southern California prospered (Cleland 1941:137-56). At the same time, cattle and sheep from elsewhere in the United States and Mexico were herded into California over the Southern Emigrant Route (San Diego Herald October 12, 1853, 2:5). Cattle on the way to the northern mines were grazed at Warner's Ranch (San Diego Herald October 22, 1853, 2:5) and in the Cuyamaca Mountains (Lindsay 1973:61).

In 1850, California became a state. San Diego was one of the original counties. At the time, it included much of the Colorado and Mojave deserts, extending from the Pacific ocean to the Colorado River and including all of present-day Imperial County and much of Riverside and San Bernardino counties. The size of the county shrank gradually as the San Bernardino area became part of Los Angeles County in 1851. Riverside and Imperial counties were then established in 1893 and 1907, respectively.

Contemporaneous with the Gold Rush were the surveys conducted by the International Boundary Commission. Lt. Amiel Whipple was assigned to survey the Gila-Colorado confluence in order to determine the boundary with Mexico according to the

Guadalupe Hidalgo Treaty. He departed from San Diego escorted by Lt. Cave Couts; they went via Warner's Pass (Couts 1932; Whipple 1961). At the same time, Andrew Gray surveyed the boundary from San Diego towards the Colorado River (Lesley 1930).

In 1853, members of the United States Army Corps of Topographic Engineers surveyed Warner's and Jacumba Passes for the purpose of determining the best route for a transcontinental railroad (Albright 1921: Chapter 8; Blake 1857; Williamson 1855).

• Early Roads (See Figure 3)

During the 1850s and 1860s, transportation routes between San Diego, Los Angeles and the Colorado River were upgraded. The Warner's Pass (San Pasqual) road was declared a public road by the San Diego County Board of Supervisors in 1854 (San Diego County Planning Commission 1938:1). It served as the main road between San Diego and the Colorado River until 1868, by which time shorter routes to the south began to be used by stagecoaches (Telfer 1951:135).

The shorter routes led through the pass at Jacumba, which had been explored by Fages in 1785. One of these routes, known as the Alternate Eastern Route, led mostly through Mexico. During the gold rush, a few prospective gold miners, particularly Mexicans had taken this route to San Diego. In 1848, it was used to take mail to Fort Yuma (Lindsay 1973:66). In 1849, Andrew Gray of the International Boundary Commission explored the Carrizo Canyon near Jacumba Pass (Dixon 1964:10; Lesley 1930:10; Lindsay 1973:61); this route would later be approximated by the San Diego and Arizona (Eastern) Railroad. In 1851, Captain Nathaniel Lyon pioneered yet another southern route; he followed a Native American trail along Cottonwood and Hauser Creeks (Lyon 1851; Pourade 1963, III:205). Although his route did not become a wagon road, cattle, sheep and military supplies and mail bound to and from Fort Yuma were taken over this route (Dixon 1964:38; Pourade 1963, III:123-4; San Diego Herald January 17, 1851, 2:1).

After 1854, the Oriflamme Canyon route pioneered by Pedro Fages in 1772 was used as the principal route between San Diego and the East. Until 1857, Joseph Swycaffer and Samuel Warnock carried mail over this route (Bloomquist 1966 I:21; Lindsay 1973:66). In 1857, James Birch established the so-called "Jackass" mail route (San Diego to San Antonio) over Oriflamme Canyon; the name was due to the fact that passengers had to traverse the Canyon on muleback (Dixon, 1964:38).

At this time, the San Diego County Board of Supervisors, recognizing that the San Pasqual road between Warner's Pass and San Diego was unsatisfactory, allocated funds for surveying a road that led through Pine Valley, Walker Canyon and Jacumba (San Diego County Planning Commission 1938:1-2). But before this road was constructed, the Butterfield Overland Mail Company stages began operating via the Southern Emigrant Route. The Board of Supervisors decided instead to build a road to connect with the Butterfield at Temecula. This road, the so-called Butterfield Connection, led through San Marcos, Vista and over the hills at Rainbow (Telfer 1951:134).

The history of the short-lived Butterfield line is well-known (Conkling 1948; Dixon 1964:47-56; Edwards, 1961; OHP, Bergman; Ormsby 1960; Wright 1961). The Butterfield Company established stage or mail stations along the Southern Emigrant Route at Vallecito, San Felipe, Palm (Mesquite) Springs, Oak Grove and Aguanga (Conkling 1948, II:220-43). The operations of the southern Butterfield line was disrupted by the Civil War, but Confederate sympathizers, Union soldiers, as well as mule trains continued to use the Southern Emigrant Route. Camp Wright was established on the route in 1861 (Lindsay 1973:70). In 1866, Phineas Banning reopened a stagecoach line between Los Angeles an Fort Yuma over the same route (Dixon 1964:57).

- Native Americans

During the early 1850s relations between the Native and Anglo Americans were tense. In 1851, Antonio Garra, a Cupeno leader residing at the village of Cupa (SA3, Agua Caliente, Warner's Springs), attempted to organize an unified attack on the Anglo Americans of southern California. His first objective was to destroy Camp Independence, the military camp established on the Colorado River for the protection of overland travelers. While Garra was at the Colorado river, Cahuillas and Cupenos from Cupa and neighboring villages attacked Warner's Ranch. Garra was held responsible, captured, tried in a military tribunal and hung for treason. The attempted uprising was one of the last violent attempts made by Native Americans to rid themselves of Anglo Americans (Phillips 1975:71-110).

Despite the failure of Garra's uprising, Anglo Americans continued to be fearful of a Native American attack (San Diego Herald, April 18, 1857, 2:1). Another consequence of the Garra uprising was a hasty peace treaty arranged by O. M. Wozencraft in 1852. The treaty offered Native Americans of San Diego County a large reservation area, flour and cattle, agricultural tools and a farm advisor in exchange for peace (U. S. Congress 1857:130-3). This treaty was not ratified by Congress, however, and relations between Native and Anglo Americans continued to be strained throughout the rest of the century (Phillips 1975:111-129).

Although Native Americans, as Mexican citizens, were guaranteed United States citizenship by the Guadalupe Hidalgo Treaty, they were not treated as such in California. They were denied the right to vote, the right to run for elected office, and the right to present testimony in court against whites (Fernandez 1968:169-71). Their rights to the land, which were not secure even during the Mexican period, were also denied during the Anglo American period (Shipek 1977:188; Sutton 1965:55, 59-60, 63-4).

One of the few institutions surviving from the mission period was the position of capitan. Wozencraft's treaty had been signed by several such capitanes (Panto of San Pasqual, Santiago of Ha-coom (Jacumba) and Lazaro and Thomas of Santa Ysabel). Indian agents also appointed capitanes, (e.g., Manuel Cota, who was made a capitan in 1859 by Special Agent W. E. Lovett (Heizer 1976:76).

In inland San Diego County some Native Americans managed to continue to live in their native villages (Chamberlin 1945:249-5; Heizer 1976:62-3, 75; Rustvold 1968:86-93; San Diego Union, December 7, 1871, 1:6; Shipek 1977:188-9; United States

Congress 1857:71; Whipple 1961:28). Their economy was still based to some extent upon traditional food gathering (Rustvold 1968:103). However, the Luiseno in particular, but also the Cupeno and Diegueno who lived near the Southern Emigrant Route had expanded their fields, orchards and herds of stock, and sold supplies to the gold seekers (Shipek, 1977:188-96). Early Anglo American observers noted their productivity. As Emory (1848:138) stated, "We longed to stumble upon their rancherias, with their flocks of fat sheep and cattle." Couts (1932:4) wrote in 1849: "The Natives . . . have an abundance of chickens, eggs, melons, grapes, pears . . . ". Ormsby (quoted in Hudson, 1964:142) noted, "We saw a number of prosperous Indian rancherias in San Felipe Valley where they raise corn and melons, and live much like white folks."

During the 1850s and early 1860s Native Americans produced a significant proportion of the county's total agricultural output. They also contributed much of the labor on the ranches and farms (Heizer 1976:75; Jasper ca. 1930, II:255; Rustvold 1968:103; San Diego Herald, August 2, 1856, 2:1; Shipek 1977:188-96).

Post-Civil War Settlement Phase, 1867-1882

Due to the devastation of the South, a great number of ex-Confederates settled in California after the end of the Civil War (Cleland, 1941:22-23); some of them settled in San Diego County. In 1867, Alonzo Horton began promoting "New Town" as the replacement for the pueblo of San Diego (Old Town) founded during the Mexican period. At the same time, proposals were being made to build transcontinental railroad lines to San Diego Bay. Although these promotions brought people to the San Diego area, there was actually little economic growth (Pourade 1964, IV:18-30).

- The Julian Gold Rush

While New Town was being developed, San Diego County had its first and only major gold rush. Gold deposits near Escondido had undoubtedly been worked during the Mission and Mexican periods, but San Diego County's mineral resources were largely ignored until after the California Gold Rush (Ellsberg 1972:13-14; Weber 1963:36). In the winter of 1869 a black prospector discovered placer gold in Coleman Creek, near present-day Julian. In February of 1870 the first lode mines were discovered. That these discoveries led to a mining boom was, in great part, due to the lack of employment in San Diego; a drought, which made farming practically impossible; and the presence of squatters, including Southern emigrants, who were not welcome in the town of San Diego at the time (Rufus Porter, San Francisco Bulletin article, February 20, 1870, transcript in Biographic File, San Diego Historical Society Library, Serra Museum; Weber 1963:36). Once the boom was on, the town of Julian was established near the George Washington Mine, the first major lode mine to be discovered. Its founder was Drury Bailey, a Georgian emigrant, who had already homesteaded and farmed the land (Ellsberg 1972:11-22; Pourade 1964, IV:53-66; Weber, 1963:115-167).

The Julian gold-mining boom was a relatively limited one. The veins were fractured by faults and difficult to follow; the gold was often found in difficult-to-process

sulphide and arsenical ores (Ellsberg 1972:9). In addition, the owners of the Cuyamaca land grant claimed that the mines were located within their grant and that the miners would have to pay royalties to them. Though the miners eventually won the case, the litigation was costly and time-consuming. For these reasons, conservative San Francisco capitalists were unwilling to invest capital needed for efficient mining (Taylor 1939:11).

For a relatively long period of time mining at Julian was an individual affair; rudimentary machinery such as arrastras and small stamp mills were common (Ellsberg 1972:61-63). By June of 1870, however, standard California stamp mills were set up (Taylor 1939:14). Water and steam were used for power. Steam pumps could not pump out water located at depths of more than 80 feet, so that many of the early mines went no deepr (OHA, H. Phillips). Although a few of the mines had their ores milled outside the mining area, at San Felipe Valley, for example (Weber 1963:126), many of the mills were located near the mines themselves. Some of the mines came to be operated by corporations; for example, the Chariot Mining and Milling Corporation (Weber 1963:124).

Most of the gold produced in the Julian and the neighboring Banner District (the two were consoliated in 1881) was mined between 1870 and 1875. Production peaked in 1872-3 (Taylor 1939:21); after 1875 mining declined rapidly. Many of the miners subsequently went to the Tombstone area mines, taking machinery with them.

A second flurry of activity took place after 1886, when Governor Robert Waterman bought the previously located Stonewall Mine; this proved to be the richest mine in the area, yielding about $2 million in gold (Weber 1963:133). During the 1890s several of the mines were reworked with compressed air drills (Taylor 1939:22) and the newly developed cyanide process (Weber 1963:117; Young 1970). Several new mines were also discovered during this period. By 1920 activity had ceased again, although during the late 1920s and early 1930s several of the mines were again worked.

Estimates of total official production for the Julian-Banner District ranged from $4 to $7.5 million. Actual production may have been much higher, since not all of the gold was sold to the United States Mint (Weber 1963:117; Ellsberg 1972:10).

The discovery of the gold at Julian led to the development of several toll roads (see Figure 3). These were built in order to improve the transportation of machinery and supplies to the mines. The Wilcox Toll Road was constructed from Julian to Banner and then extended to the Southern Emigrant Route in San Felipe Valley in 1871 (San Deigo Union June 22, 1871, 3:3). Another toll road led from Julian to Santa Ysabel. Yet another toll road, the Atkinson Toll road, led from the Foster Station (north of Lakeside) to Ramona. At the same time, San Diego County Board of Supervisors granted the San Diego-Fort Yuma Turnpike a franchise to operate a toll road between San Diego and the Colorado River via Mountain Springs (Ellsberg 1972:55-61; Menzel 1943; Moore 1956; San Diego County Planning Commission 1938; Telfer 1951:138-9).

• Mexican Land Grants (See Figure 4)

The Californio cattle ranchers of the "cow counties" of southern California prospered during the cattle boom of the early 1850s. They were able to "reap windfall profit . . . pay taxes and lawyers' bills . . . and generally live according to custom" (Pitt 1966:105). In northern California, however, the land-hungry Anglo American immigrants, accustomed to homesteading the public lands of the West, resented the fact that much of California was in the hands of a few and that most land was primarily used for nothing more than pasture. Squatters took over much of the land of the northern Californios (Pitt 1966:83-103). In order to cope with this situation, the United States Congress passed the Private Land Claims Act of 1851 (Gates 1958:224).

While the Guadalupe Hidalgo Treaty recognized the property rights of Mexican landholders, this Act stipulated that the former Mexicans would have to sue the federal government for possession of their lands. This often proved to be a costly and complicated process. In many cases, the Californios had no documents to back up their claims to lands they had been living on for generations. The boundaries of the land grants were often vague. Anglo American law, however, required exact, surveyed boundaries. The resulting litigation required Anglo American lawyers, and since cash was scarce, landholders often had to offer to pay them with land (Pitt 1966:104-119).

Despite these difficulties, some Californios managed to hold on to their land grants. In inland San Diego County many of the ranchos were patented to their original owners (Brackett 1939; San Diego County Patent Book 1, San Diego County Recorder).

The Californios did not hold their lands for long, however. The Act of 1851 was only one of the many reasons for this. The litigation over land was often not between landholder and the federal government, but between heirs (Gates 1958:232). The Californios lost their lands largely because they were overly dependant on cattle as a source of wealth. The droughts of 1856 and 1863-4 hurt them, as well as the drop in the price of beef after 1855. The Californios, and southern Californians in general, suffered from the usurious rates of interst prevalent in the area. Another important factor in the decline of the Californios were the taxes imposed upon landholders after California became a state in 1850; previously, there had been none. Finally, although many of the earliest Anglo Americans to arrive in California had married Californio women, prejudice was of course a major reason for the decline of the Californios (Cleland 1941:107, 111-6; Pitt 1966).

In San Diego County, the land grants quickly came into the possession of Anglo Americans. By 1883, only Rancho Santa Maria was (partially) owned by an heir of an original claimant. (Elliott 1883 (1965):151).

• Farming

Due to the immigration of Southerners, the development of New Town and of the Julian gold mines, the population increased (see Appendix H), and settlements were established throughout the inland County (see Appendix G). During this decade most

of the Mexican land grants were patented, thus encouraging improvements to be made. Throughout most of the county, Native Americans and Californios were being displaced by Anglo Americans, and cattle ranching began to be replaced by farming.

Mining in northern California had kept down the farming population of southern California during the 1850s. Farmers tended to settle near the gold fields, where the land was good and agriculture lucrative (Raup 1959:62). However, there was some Anglo American farming in inland San Diego County during the 1850s (San Diego Diego Herald, December 17, 1853, 2:2). At Ballena (SA2), for example, where irrigation was not necessary, Samuel Warnock was raising crops as early as 1855 (Jasper ca. 1930, II:252-4).

On the whole, though, agriculture was primitive and limited. During the 1860s, zanajas (ditches) were still the basic method of diverting water from streams (San Diego County Planning Commission 1937:10; San Diego Union April 3, 1878, 1:5); although China pumps and hoses were being used in San Pasqual Valley (SA2; Rustvold 1968:105). As late as 1878 water was still being taken out from the San Luis Rey River from the same diversion point that had been used by the missionaries at Pala (San Diego Union April 3, 1878, 1:5).

By the early 1870s farmers had learned to dry-farm and to cope with some of the pecularities of San Diego County's climate (San Diego Union February 6, 1868, 2:1; Van Dyke 1886:173-176). Between 1869 and 1871, cultivated acreage in the County went from less than 5,000 acres to more than 20,000 (San Diego Union January 2, 1872, 1:1). Of course, droughts continued to hinder the development of agriculture (Clouch 1915 (cr):3; San Diego Union, November 10, 1870, 2:1; Shipek 1977:195).

The general decline of cattle-raising also contributed to the expansion of agriculture. Though there had been a cattle boom during the early 1850s, after 1856, a drought, the introduction of sheep and cattle from Mexico, Texas and elsewhere in the United States, and the breeding of better cattle in northern California, brought down the price of cattle. The great drought of 1862-4 almost completely decimated the cattle industry of southern California (Burcham 1961; Cleland 1941; San Diego Herald January 10, 1857, 2:2); although in San Diego County, cattle ranching thrived until the early 1870s.

The growing importance of farming in southern California led to the passage of the No Fence Act. This Act, passed in 1872 (Statutes of California 19th Session, 1872: 99) made the owner of animals responsible for damage done to agricultural fields, whether they were fenced or not; previously, it had been up to the farmers to protect his crops (Burcham 1956:45). There had been some resistance to its passage, but on the whole it was favored (see San Diego Union January 15, 1871, 3:2, March 16, 1871, 2:4; July 13, 1:7; July 27, 1871, 1:6; December 21, 1871, 2:2). Nevertheless, there was some violence between ranchers and farmers in the county. According to Crouch 1915 (CR): 20), the Act caused "almost anarchy in some of our communities."

In southern California, the passage of the No Fence Act marks the transition made from a stock-raising economy to a farming one (Raup 1965:65). The Act allowed the expansion of unfenced farms, which was crucial in an area where fencing material

was practically unavailable. Five years after its passage, most of the arable lands in San Diego County had been patented, and growing grain crops replaced raising cattle in many of the county's inland valleys (Blick 1976:125; Elliott 1883 (1965):154).

Technological developments also contributed to the expansion of agriculture. Windmills were introduced in the 1870s (Elliott 1883 (1965):157). Steam-powered pumps were introduced into San Diego County by 1877 (San Diego Union July 23, 1877, 1:5). Agricultural machinery of various kinds were also in use by the early 1870s. A hay bailer was used in the San Luis Rey River Valley in 1871 (Crouch 1915 (CR):51). Steam-powered threshers were reported in Ballena as early as 1872 (San Diego Union July 27, 1873, 3:1)

Small orchards and vineyards were established in inland San Diego County (Van Dyke 1888:16-17). The Franciscan missionaries had proved that a great variety of fruits could be grown in the mild climate of southern Califonria (Harmon 1964:2). However, with the exception of vineyards in the Los Angeles area and the orchards maintained by Native Americans, most southern Califonria fruit-growing was abandoned after secularizonation (Harmon 1964:20). The Anglo Americans re-introduced fruit-growing into the county during the late 1840s (Harmon 1964:22-4). During the 1860s and 1870s there were vineyards at various locations throughout the county, including Pala, Julian, Poway and Escondido (Harmon 1964:28). During the early 1870s, Frank Kimball, the developer of National City, experimented with various fruits, including olives, figs and citrus (Blick 1973:125; Phillips 1960:6-16). Oranges were planted at the Harvey Ranch on Dulzura Creek (SA1) in 1871 (Lutz 1964:9). At Julian, apples and other deciduous fruits were planted (Blick 1976:125: San Diego-California Club, 1926:57, 63, 65). Apricots thrived (Elliott 1883 (1965):155).

Large scale farming in San Diego County was limited by lack of water and by the small size of arable valleys. Moreover, the small urban population and poor roads limited commercial crop-growing. Harvesting machinery was, therefore, relatively unimportant in San Diego County (Gordinier 1966:2; Raup 1959:68; Van Dyke 1888:156).

• Cattle Ranching

By 1873, after the No Fence Act has been passed in the interest of farmers and after the drought of 1870-71, San Diego County cattlemen were "pretty well cleaned out" (Crouch 1915 (CR):36). By 1877, most arable lands had become too valuable for profitable stock-raising (Gordinier 1976:73; San Diego Union November 4, 1875, 2:1-2), and in many inland valleys grain farms had replaced cattle ranches (Blick 1976:125). Cattle nevertheless continued to be grazed in inland San Diego County. In the Otay-Hauser study area, for example, the No Fence Act had little effect, for ranches were still far apart and natural ridges kept cattle out of gardens (Gordinier 1966:72).

As in much of the Southwest, the local longhorns were improved by breeding, particularly with Herefords (Blick 1976:124; OHP, Bratton, San Diego Union October 2, 1875, 3:1). Cattlemen in San Diego County made the most of their limited ranges by moving their cattle between mountain pasture in the summer and lower pastures in

the winter. Cattle was also grazed along the coast during the fall (D. McCain, personal communication, July 17, 1978), and on leased grazing lands in Baja California (San Diego Union July 5, 1875, 3:2, June 9, 1875, 3:1, July 7, 1875, 3:2).

The cattle bound for Baja California passed through Campo (SA1), which became one of the centers of San Diego County cattle ranching. This area was in part settled by ex-Confederates, some of whom had brought Texas cattle with them (Blick 1976: 124; San Diego Union June 20, 1869, 2:1). Among the prominent ranching families of this area were the Brattons, Camerons, Bentons and McCains (Gordinier 1966:58-60; McCain 1955 OHA, C. Cameron). The Campo Cattle Company, established in the 1880s and at one point owned by the Bentons, was one of the main cattleranching operations in this area (J. L. McCain, personal communication, June 17, 1978). Cattle were also grazed at Mesa Grande, Julian and Ballena (Ponchetti, 1973 interview; Reed 1963). George Sawday of Witch Creek became one of the important cattlemen in this area (OHP G. Sawday; San Diego Union, May 13, 1962, b-1, b3).

- Minor Economic Activities

During the 1870s San Diego County became a major producer of honey. Bees had been introduced into the county by John S. Harbison in 1869 (Watkins 1969). Between the 1870s and the 1890s, apiaries were established at Poway, Bernardo, Ramona, Ballena and Rincon (SA2); Campo, Dulzura, Jamul and Proctor Valley (SA1): and Julian, Banner and San Felipe (SA3) (Gunn 1887; Heilbron 1936:234; OHP, E. Brown, Bailey; San Diego-California Club et al 1926:63, 65).

By 1875 there were 1,210 registered beekeepers and 31,127 colonies in the county, producing some 400,000 pounds of honey, most of which was exported. The honey was very much in demand in the East and in Europe, and it was one of the few products that could be profitably transported to San Diego Bay over the rough country roads. Production climbed steadily until 1878, after which it declined. Production rose again in 1885, when more than two million pounds were produced. In that year, San Diego was the principal honey producer in the state. Finally, due to ploughing and burning, production declined, although there was a brief surge in production during World War I due to a shortage of sugar (Crouch 1915 (SDHS):29; Farm Advisor Files, April 8, 1918; La Force 1971:31; Phillips 1960:40; Van Dyke 1888:11, 15).

During the 1870s sheep-raising had a brief boom in California. Although hardy, short-haired sheep (churros) had been introduced by the missionaries, they were not raised in significant numbers during the Mexican and early Anglo American periods. The disruption of the Southern cotton industry and the demand for uniforms brought about by the Civil War, however, led to a rise in the price of wool during the 1860s (Cleland 1941:89). Better breeds of sheep were brought to California, and the industry, centered in Monterey, expanded.

In San Diego County the number of sheep increased from less than 17,500 to more than 75,000 between 1869 and 1872 (San Deigo Union 1/2/1871, 1:1). As the cattle population fell during the 1870s, the sheep population rose (Crouch 1915 (CR):37). The passage of the No Fence Act also promoted sheep-raising, because sheep, unlike cattle, had to be constantly tended, and could, therefore, be kept out of unfenced fields. Many farmers in San Diego County began raising sheep instead of cattle (San Diego Union December 9, 1871, 3:1).

Wool, like hides and tallow, was imperishable, compact and had a high value per unit of weight (Burcham 1956:71). Given the poor roads and the availability of cheap, skilled Native American shearers (Crouch 1915 (SDHS):44-5; H. H. (1883:817), sheep-raising was well suited to San Diego County. The sheep industry did well until 1876, when the price of wool began to decline (San Diego Union June 21, 1876, 2:1). The price drop and a drought in 1876-7 put an end to the business (Cleland 1941:191; Crouch 1915 (CR):39).

In inland San Diego County sheep were raised in the Cuyamaca Mountains (Crouch 1915 (CR):9); Santa Ysabel (SA3, Crouch 1915 (CR):52), Rancho San Felipe (SA3, San Diego Union, April 16, 1874, 5:2), Cameron Valley (SA1, Crouch 1915 (CR):52), and in the vicinity of Campo (SA1, Shipek 1977:129).

- Native Americans

After the Civil War, when inland San Diego County began to fill up with Anglo Americans, Native Americans were no longer able to prevent them from taking their lands and water (San Diego Union July 23, 1873, 3:2). In 1870, President Grant created by Executive Order, a reservation at San Pasqual Valley (San Diego Union Weekly March 10, 1870, 3:1). This was an attempt to protect the Native Americans living there. But San Pasqual contained valuable, irrigable land, and in response to settlers' complaints Grant revoked the order in 1871 (Peet 1949:58-61). Native Americans were evicted from San Pasqual in 1878 (Rustvold 1968:133-4). In 1875, reservations were set aside by Executive Order throughout the inland County (Shipek 1977:197; 1978; League of Women voters 1974). Native American villages were often located outside reservation boundaries, however, and squatters were settling within the reserations. (Jackson 1883:7, 25-28).

Throughout the county, Native Americans were often killed outright or hung for stealing, persecuted, and denied access to their water supply (Gordinier 1966:68; Jackson 1883:22-23; Lindsay 1973:38; San Diego Herald August 15, 1857, 2:2, February 27, 1858, 2:5, April 3, 1858, 2:1; San Diego Union, February 27,1872, 3:2, May 31, 1876, 3:2, May 4, 1881, 4:3, April 23, 1884, 3:1; San Diego Union Weekly, July 14, 1869, 2:1, September 7, 1871, 1:4; Sutton, 1965:76). Due to these and other practices, the Native American population continued to decline in number (Foote 1890; Heizer 1976:76; Jackson 1883:3; Wright 1894:202).

Railroad Phase, 1882-1919

During the late 1880s southern California was transformed as railroad tracks reached it from San Francisco and the East. The influx of Anglo American settlers arriving on railroads led to a great real estate boom. Although the boom eventually collapsed, it brought people and capital into San Diego County and "wiped out . . . the last traces of the Spanish-Mexican pastoral economy" (Dumke 1963:276). The county's population quadrupled. While the majority of the newcomers settled in the area surrounding the city of San Diego, the population of the inland county also increased substantially (see Appendix H). The population increase stimulated farming, and the railroads allowed the export of some agricultural goods. The development of the county's water resources was one of the direct consequences of the railroad boom.

• Railroad Boom

The first transcontinental railroad (Central Pacific-Union Pacific) connected San Francisco with the East in 1869. For the next half century San Diegans attempted to make their harbor the terminus of a transcontinental railroad. These attempts were foiled by the difficulty of traversing the Peninsular Ranges. In 1853, the United States Army surveyors had concluded that San Gorgonio Pass was the best southern entry into southern Califonria. Wheeler (1855, volume 5, part 1:42) had noted that "Warner's Pass presents many difficulties"; he also noted that the wagon road between Warner's Pass and San Diego was impossible for a railroad to traverse (1855, volume 5, part 1:38).

Although the owners of the Central Pacific proceeded to build tracks southeastward towards the Colorado River in order to block the entry of their competitors, they had no intention of making San Diego Bay a terminus. This was not only because of its formidable mountain ranges and its lack of exportable commodities, but because they did not intend to make San Diego's harbor a rival to San Francisco's (Fogelson 1967:46; Menzel 1943:6).

By 1882, the Central Pacific's subsidiary, the Southern Pacific, had built tracks to Needles via Barstow and to Yuma via Los Angeles, but in San Diego railroad companies only existed on paper. The earliest such railroad company, the San Diego and Gila, Southern Pacific and Atlantic, was incorporated in 1854 (San Diego Herald November 18, 1854). During the latter half of the nineteenth century, impracticable railroad lines were projected throughout the county (Menzel 1943; Rustvold 1968: 181). Surveyor Andrew Gray (1858) proposed that an inclined plane be constructed in order to hoist up the trains over Warner's Pass. In 1872, Thomas Scott of the Memphis, El Paso and Pacific, came to San Diego to announce that a transcontinental railroad would be built to San Diego Bay; but the scheme collapsed (Menzel 1943:13). Nevertheless, people who would have otherwise moved on often stayed in the San Diego area because of the possibility that one of the projected railroads would actually be built. Many of the pioneer settlers of Jamul Valley (SA1), for example, settled there in the hope that a railroad would be built to take their crops to market (Schmid 1963:136-7).

During the 1880s San Diegans decided that they would have to accept a spur line from Los Angeles, rather than have no railroad connection at all. The California Southern Company was incorporated, and a railroad was constructed from National City through Fallbrook to San Bernardino. Completed in 1882, it was washed out in 1884 (Pourade 1964, IV:253). Fortunately by then, the Atchison, Topeka and Santa Fe had managed to enter California, and it built a line to San Diego along the coast. In 1885, a connection was made at Barstow, and San Diego received its first transcontinental passengers (Fogelson 1967:69; McGrew 1922:159). The Southern Pacific and the Santa Fe then engaged in a rate war, which led to a great real estate boom in southern California. In San Diego, it peaked in 1887 (Dumke 1963:137). The subsequent growth of San Diego County was largely due to its railroad connection (Pourade 1964, IV:155-90).

Two secondary railroads were constructed into inland San Diego County late in the 1880s. A spur of the Santa Fe was constructed from Oceanside to Escondido in 1887 (Ryan 1970:35). In 1889, work began on Governor Robert Waterman's San Diego,

Cuyamaca and Eastern. Although projected as a transcontinental line, it only got as far as Foster (a few miles north of Lakeside, at the edge of present-day San Vicente Reservoir). Until the flood of 1916 washed out most of the tracks, Foster served as a railhead for inland communities such as Julian (OHP, Blanc; Quastler 1976:155; San Diego Union September 11, 1887, 3:5; March 31, 1889 1-3).

• Water Resources

One of the direct consequences of the railroad-induced real estate boom was the development of the water resources of San Diego County (Dumke 1963:241). Late in the 1880s private companies were formed to build water reservoirs to provide San Diego with water for drinking and irrigating. Sweetwater Dam, the county's first major dam, was completed in 1888 by the Kimball Brothers Water Company (Fowler 1963:29-31). In 1889, drinking water was brought to San Diego in a wooden flume constructed by the San Diego Flume Company; the water came from a reservoir built at Bear Creek (Cuyamaca Lake; Fowler 1963:93; Pourade 1964:253). Thus, the watersheds of inland San Diego County began providing water for the more populous coastal region.

The passage of the Wright Act in 1887 (Statutes of California, 27th Session, Chapter 33:29-45) contributed to the development of the water resources of southern California. This act authorized the creation of irrigation districts and the issuance of bonds necessary for the construction of irrigation works. In San Diego County, two districts were formed under the Act. The Escondido Irrigation District was formed in 1889 (Fowler 1963:123-4; San Diego Union November 13, 1889, 4:1). The Fallbrook Irrigation District was formed in 1896, but it failed due to litigation (Fowler 1963:23).

Droughts during the late 1890s continued to spur the development of water resources in San Diego County (Ellis and Lee 1923:16-17). Between 1889 and 1909, irrigated acreage in San Diego County more than doubled, from less than 10,000 to 24,994 acres (San Diego County Planning Commission 1937:11). The Escondido Irrigation District built a dam at Bear Valley in 1894-5 (Fowler 1963:124; Warn 1974:1). The Southern California Mountain Water Company, organized in 1895, proceeded to build dams in the watersheds of the Otay-Hauser Mountain study area. These dams, the Upper and Lower Otay, Morena and Barrett, were completed late in the 1890s and early in the twentieth century. The Dulzura (San Diego City) Conduit, which took overflow water from Lake Barrett to the Lower Otay Reservoir, was completed in 1909. Three years later, the Barrett-Dulzura-Otay section of the Southern California Mountain Water Company was bought by the City of San Diego (Fowler 1963:48-55).

Small-scale improvements were made elsewhere in the inland county. At Julian (SA3) and other localities in the back country, deeper wells were sunk (San Diego Union March 21, 1900, 5:3). At San Pasqual (SA2), farmers consolidated their irrigation system by relying on a single diversion at the west end of the valley (San Diego Union February 17, 1902, 5:2).

In certain areas, however, particularly the McCain Valley study area, wells were never sunk, or they were very shallow and provided only enough water for domestic use or for cattle (Burnham 1954:8). An exception for this area was the water delivery

system constructed by the Campbells of Vallecito Valley. During the 1930s they constructed a costly pipe-and-ditch system from Mason Valley in order to irrigate alfalfa, grown to feed their cattle (South 1939:26).

Early in the twentieth century several mutual water companies were organized, including two near Lakeside, one in the Pauma Valley (SA2), and one at Julian (SA3) (Fowler 1963:159-62; San Diego County Planning Commission 1937:13). The California legislature had so stringently revised the Wright Act (Adams 1929:17), that new irrigation districts were not formed in San Diego County until 1913, when the La Mesa, Lemon Grove and Spring Valley Irrigation District was formed (Adams 1929:316-22). The District took over the previously constructed Cuyamaca reservoir and its flume.

The water impounded in the inland county reservoirs was intended primarily for the city of San Diego and coastal irrigators. Settlers in the back country continued to rely on private wells. Ground water in inland San Diego County was not abundant (Ellis and Lee 1923; Troxell 1957:58-65). The first wells were dug by hand. Technological improvements soon made drilling and pumping easier. Windmills were used, and by 1877 steam-powered pumps were used throughout southern California (San Diego Union June 23, 1877, 1:5). Later, hydraulic jets and engines powered by gasoline and electricity became common; concrete pipe was developed in 1882 (Raup 1959:125). Skilled well-diggers were much in demand (OHP, R. Darrough).

Local inventors made their own attempts to improve pumping machinery (see for example, San Diego Union, October 13, 1877, 1:5). When the expansion of irrigated lands made it necessary to sink wells in gravel beds, a distinctive type of well, the California "stovepipe" well was developed in southern California (Schlichter 1905:100). The basic component of this well was a perforated casing (the "stovepipe"), which was sunk by a hydraulic, steam-powered jack. The wells were relatively cheap, could be sunk in areas full of boulders and debris, and the perforations in the casing allowed water from various depths to seep into the well (Schlichter 1905:98-103). Early settlers had achieved the same ends by digging side channels into their wells (V. Brown, personal communiation, May 7, 1978).

• Minor Economic Activities

The development of water resources led the county into its third stage of agricultural development. During the 1870s the transition had been made from cattle ranches to grain farms. During the 1880s and 1890s, although grain farms continued to operate in the Inland Valley study area, (San Diego Union January 20, 1889, 1:4-6), they began to give way to orchards and vineyards (San Diego Union June 15, 1889, 8:1). Between 1888 and 1889, there was a 55,063-acre increase in land under cultivation in San Diego County (San Diego Union January 15, 1890, 14:70). Agricultural equipment was sold in great quantities (San Diego Union, December 29, 1888, 1:6), and crops, including potatoes and raisins were exported to the East on the Santa Fe railroad (San Diego Union June 15, 1889, 8:1). Horticulture in San Diego County was fostered by the efforts of Frank Kimball of National City, who had been testing fruit trees since 1869 (Phillips, 1960). Kimball founded the San Diego County Fair in 1880 and also

served as the State Commissioner of Horticulture between 1880 and 1898 (Blick 1976:125). In 1889, the San Diego County Board of Supervisors appointed a Fruit Inspector (San Diego Union January 19, 1889, 4:1).

- Orchards and Vineyards

Vineyards were planted in the Inland Valley study area, at San Pasqual, Escondido, as well as at Julian (SA3), and Jamul (SA1) (Harmon 1964:41; Blick 1976:125; Ryan 1970:84). Raisins became an important product (Harmon 1964:42, 45). In 1889, some were exported to Chicago and Cincinnati on the Santa Fe railroad (San Diego Union, June 15, 1889, 8:1). Olive groves were also planted during the 1890s (La Force 1971:32). Olive trees did best near the coast, but some were planted at Dulzura (SA1) and Valley Center (SA2). Oranges and other citrus groves were planted, particularly in the Inland Valley study area and in the western portion of the Otay-Houser Mountain study area (Lutz 1964:9-10; Schmid 1963:33). The center of the inland county orange-growing area was Escondido, where the California Fruit Growers Exchange established a packing shed in 1908 (Ryan 1973:84-86).

During the 1890s some of the orchards were abandoned during the 1890s due to the removal of tariff protection, droughts and the national depression (Gordinier 1966:106; Blick 1976:126). Beginning in 1892, avocado groves, which were to replace some of the citrus groves, were planted primarily in the coastal areas. The first commerical planting of avocado groves took place in 1914 (Oceanside Blade January 18, 1929, clipping in Farm Advisor Files).

- Dairies

By the turn of the century the growing urban areas had created a demand for milk products. As a result, dairies were established in inland San Diego County, at San Pasqual Valley (SA2), Ramona (SA2), Escondido (SA2) and Santa Ysabel (SA3) (Blick 1976:131; Peet 1949:107-12, 200; Rustvold 1968:157, 167-8; San Diego-California Club, et al. 1926; Van Dyke 1888:76). In the Otay-Hauser Mountain study area, dairies were not developed until the late 1920s and early 1930s (Gastellum, personal communication, June 17, 1978; San Diego Union March 23, 1934, 3:1; Gordinier 1966:134).

The dairies of San Pasqual can be considered representative of dairies in the county. John Judson, formerly of Sonoma County, brought a herd of Durnham cows to San Pasqual in 1875. By 1894 he had established a creamery, which used steam-operated separators, Judson shipped the butter to San Diego by wagon. In 1905 his creamery merged with the neighboring Circle Creamery. At this time alfalfa and grain was beginning to be imported (from the Imperial Valley) rather than being grown locally. By 1915 milk from the San Pasqual Valley was being shipped by truck into San Diego, and in 1920 the creamery was transferred to Escondido to make transportation easier (Peet 1949:107-12, 200; Rustvold 1968:157, 167-8).

- Cattle-Ranching

By the early 1880s even the lands on the eastern, desert slopes of the Peninsular Ranges were being settled. James Mason, Chatham Helm and Paul Sentenac settled in desert-side valleys during the early 1880s (Jackson 1883:22; Lindsay 1973:73; San Diego County Patent Books). Settlers in the desert valleys engaged almost exclusively in cattle ranching.

Cattle were being grazed in the Colorado Desert by the 1880s (J. L. McCain, personal communication, June 17, 1978). If the season was at all wet, cattle would readily fatten on the bunch grass, galleta grass and mesquite of the desert (Ponchetti 1973; Reed 1963:48-9). As the cattlemen put it, during a cold winter in the mountains, "the cattle could live off the temperature" of the desert (J. L. McCain, personal communication, June 17, 1978). By 1892, 10,000 cattle were reported to be grazing in the Colorado Desert (San Diego Union December 3, 1892). In the dry winter of 1897-8, the Tripp brothers from Anza Valley grazed their cattle in Mason Valley (Lindsay 1973:78; Reed 1963:45). Mesa Grande cattlemen were also grazing in the area (Ponchetti 1973).

Cattle continued to be grazed in the McCain study area during the first decade of the twentieth century. Ralph Benton, Archie Chillwell, Bert Moore, George and Robert McCain and Sam Thing were wintering cattle in the McCain study area, at Vallecito, Mason Valley and Canebrake Canyon (Lindsay 1973:63, 76; OHP, S. Thing; Ponchetti 1973). Native American trails over the mountains were the routes used for taking cattle into the Colorado Desert (Reed 1963:144).

After 1901, when the first Colorado River water was diverted into it, the Imperial Valley served as the principal winter feeding ground for San Diego County cattle (Lindsay 1973:75; Reed 1963:51, 87).

- Mining

The completion of Governor Waterman's San Diego, Cuyamaca and Eastern Railroad to Foster (SA2) in 1889 allowed the exploitation of nearby gray granite quarries (located at T14S, R1W, S. 35 and 36, and T15S, R1W, S. 1 and 2; Weber 1963:258, Plate 10). Black granite, for which San Diego County was noted (Hoppin and Norman 1950), was quarried near Escondido where John Stridsberg began quarrying in 1923 (Weber 1963:260, Plate 10). Further information on the exacting methods of granite quarrying, in great part done by men of Scandinavian descent, is available at the San Diego History Research Center (e. g., R. Blake interview Weber 1963:255-268).

Marble was briefly quarried at the Verruga Marble Deposit (T11S, R4E, S. 10, near the Montezuma Gold Mine) in the early 1920s. Transportation costs proved too high, and by 1923 the quarrying had practically ceased (Weber 1963:180).

The growth of San Diego led to the local manufacture of a Portland-type cement. In 1887, at the height of the real estate boom, a shortage of cement had been noted (San Diego Union September 29, 1887, 4:2). In 1889, tests were made on a cement manufactured from a travetine deposit of limestone found on Rancho Jamul (San

Diego Union, August 1, 1889, 8:1). The Jamul Portland Cement Company was organized in September of 1889 (San Diego Union September 12, 1889), and in the spring of 1890 a complex consisting of kilns, drying vats, and a bunkhouse was constructed near the limestone deposit (San Diego Union April 8, 1890; April 23, 1890, 6:1). A few tons of cement were manufactured in the coke-burning kilns and exported to San Diego, Chino and other sites in southern California. But the high cost of transporting the imported coke fuel and the manufactured cement to and from railheads was so expensive that English cement exported to California by ship was cheaper. The company ceased operating after a few months (Storms 1893:383; Weber 1963:179-80).

Gemstones, tourmaline principally, began to be mined on a large scale at the turn of the century. The gems had been known to the Native Americans, but the first recorded discovery was made near Pala (SA2) in 1872. Richer deposits near Mesa Grande were discovered in 1898. Gem-ming was stimulated by the high price of tourmalines in China. Intensive mining took place mostly between 1900 and 1912, when the fall of the Chinese dynasty brought down the high prices. Mining peaked in around 1905 (Pourade 1965, V:48-53; Weber 1963:84-115), but several of the mines were reopened in the 1970s (Phillips 1976:79).

In the beginning the mines were simply surface cuts; later they went underground. About 90 percent of the gem production of southern California came from five mines in inland San Diego County: the Himalaya (T11S, R2E, S. 17) and the San Diego (T11S, R2E, S. 20); and the Pala Chief (T9S, R2W, S. 24), Tourmaline Queen (T9S, R2W, S. 14 and 15) and the Katerina (T9S, R2W, S. 24 and 25) (Weber 1963: Figure 23, Plates 3 and 4; additional information is found in Jahns and Wright 1951; and Pala Chief Gem Mines 1915).

During the first decade of the twentieth century there were minor gold-mining flurries in the County. Gold was mined near Escondido (SA2, Orofino Mine, Cleveland Pacific Mine, T12S, R2W, S. 26; Weber 1963:120); near Dulzura (SA1, Donohue Claims, T18S, R2W, S. 8, 16, 21, 27; McCain 1955:15, 18-19; Schmid, 1963:39; Weber 1963:122); and near Ranchita (SA3, Montezuma Mine, T11S, R4E, S.10; Weber 1963:156)

- Towns

By the 1880s San Diego County was predominantly Anglo American. Although the earliest houses of the Anglo Americans had often been made out of adobe in the Mexican fashion (Rustvold 1968:107-8), most of the houses of the 1880s were constructed out of milled lumber (Meyer 1975:16). The Anglo Americans also began to fence their farms with barbed wire, which was resented by the Californio ranchers. Herbert Crouch (1915 (SDHS):66) wrote that when he introduced barbed wire in San Pasqual Valley:

> There was a great outcry . . . The Marrons threatened to cut it, said it would injure their horses. I told them that was what I wanted to do . . . for they had eaten my grass long enough . . .

The Californios had largely prevented Anglo Americans to settle on their Mexican land grants (Meyer 1975:16). But many of the county's early communities, such as Escondido, Bernardo, Ramona and Santa Ysable, were established on former ranchos, after they were patented in the 1870s.

By the early 1880s, most of the important communities of San Diego County had been established. Each has its own hsitory, but they share certain common features. With few exceptions, the early communities were located in favorable agricultural areas. Even in Campo, a cattle-ranching center, grain and alfalfa were raised; apples could be grown near Julian, the mining town. Roads were another important factor in the development of early communities (see Figure 3). Campo, for example, was located on the road to Fort Yuma. Poway, Bernardo, San Pasqual, Ramona and Ballena were located on the road to Warner's Pass. Many of the towns began as stores established on the roads. The town of Ramona, for example, grew up around the store established by Amos Verlaque in 1883 (Meyer 1975:31). During the early 1880s, the Gaskill brother built a large store in Campo, where they also operated a grist mill (Gordinier 1966:86; Gunn 1887:72). Pourade 1964, IV:129). The Things established stores at Potrero and Tecate, where they did much business with Mexicans from across the border (McCain 1955:19-21; OHP, S. Thing). Mining led to the establishment of Julian and Banner (Julian Historical Society 1969; Ellsberg 1972).

The history of Escondido is perhaps typical of the towns that developed in the Inland Valley study area. During the 1870s, Rancho Rincon del Diablo, Escondido's future site, served primarily as a sheep pasture. While a community known as Apex (see Appendix G) existed early in the 1880s, the town of Escondido was created by the Escondido Land and Town Company, one of the many real estate companies that appeared in southern California during the railroad boom of the 1880s. This company bought Rancho Rincon del Diablo in 1883 (Wilson 1965:134) and promoted its development as a town. By 1886 a brick factory, lumber company, hotel and bank had been established. The railroad spur that was constructed to Escondido from Oceanside in 1887 further stimulated its growth. In 1888, Escondido incorporated itself as a city. During the 1890s, droughts and the general financial malaise reduced its population (Ryan 1970:14-88).

Water was of course crucial to the development of Escondido. At first, its water came from wells (Lutz 1964:22). In 1889, the Escondido Irrigation District was organized under the Wright Act. In 1894-5 Bear Valley (now Wohlford) Dam was constructed to provide Escondido with a reliable source of water. The Irrigation District subsequently failed and was taken over by the Escondido Mutual Water Company. In 1905, the dam above Escondido was enlarged (Warn 1974:3).

The economic basis of Escondido was agricultural. The real estate company had planted vineyards, and until the 1920s, raisins were an important export (Harmon 1964:41-2). After the railroad spur from Oceanside was constructed, Escondido served as a shipping center for the agricultural products of the surrounding areas. In 1908, the California Fruit Growers Exchange established a large packing plant in Escondido. During the 1930s avocado orchards flourished in the area (Ryan 1970:84; Ryan 1973:78-89).

The history of Ramona was similar, except that it was a stage stop and never had a direct railroad connection (Meyer 1975; Perice ca. 1954).

Dulzure can be considered typical for the western portion of Otay-Hauser Mountain study area. Its settlement was induced by the horticultural promotions of Frank Kimball. The Harveys, a pioneer family, came to the area soon after 1869, to plant oranges (Schmid 1963:33). The area proved favorable for fruit trees, although frosts and floods destroyed orchards. During the late 1880s, the Clarks, another pioneering family, planted citrus, figs and olive trees. (Schmid 1963:50-55), but cattle was the principal source of cash (D. R. Harvey, personal communiation, May 19, 1978). By 1887, the Hagenbucks had established a store, post office and inn (Schmid 1963:60-69). In 1908, there was a minor flurry of gold mining to the south of the town (McCain 1955:15; Schmid 1963:39). Although many of the settlers hoped for a railroad (Schmid 1963:136-7), none was ever constructed, and the settlement remained small.

• The San Diego and Arizona Railroad

In 1906, the San Diego and Arizona Railway Company was incorporated in order to build the transcontinental connection that had been envisioned in the nineteenth century by the San Diego and Gila (O'Bannon 1977:4; San Diego Union December 14, 1906). With the aid of the Southern Pacific it proceeded to construct a railroad through Jacumba Pass (McGrew 1922:169; O'Bannon 1977:6). Like the earliest routes, it went partly through Baja California. The surveyors chose the cheapest, most practicable route and one with a uniform low grade (G. W. Grosdidier, personal communication, May 26, 1978; O'Bannon 1977:7).

Laying the tracks along the Carrizo Gorge was difficult, especially since several tunnels had to be built. According to O'Bannon (1977:2), the railroad could not have been constructed without the steam shovels, jack hammers, compressed air rock drills, explosives and steel of the twentieth century. Repeatedly delayed by the Mexican Revolution, labor shortages, floods and World War I, the railroad was not completed until 1919 (O'Bannon 1977:44). (This date has been used to mark the end of the railroad period in inland San Diego County.)

The San Diego and Arizona was not a commercial success. By the time it was completed, automobile travel was commonplace, and it carried few passengers. Imperial Valley farmers were already shipping crops directly to the East and to Los Angeles. By the late 1930s, trucks were in competition with it (G. W. Grosdidier, personal communication, May 26, 1978; O'Bannon 1977).

In the fall of 1976 it suffered the fate of many of the desert railroads: it was washed out by a flash flood, and its owners petitioned the Interstate Commerce Commission for permission to abandon it (see Myrick 1963:494, 660-1, 752, 849, 854). However, the Pacific Southwest Railway Museum Association has proposed to preserve the railroad as a historical monument and for emergency use (Pacific Southwest Railway Museum Association 1977).

One of the reasons for the construction of the San Diego and Arizona railroad were crop yields expected to be exported from the Imperial Valley. After the Valley began to be developed in the first decade of the twentieth century, many of its early settlers passed through San Diego County. The road through Jamul, Delzura, Campo and Jacumba (formerly the San Diego-Fort Yuma Turnpike, Figure 3) was heavily used (Schmid, personal communication, May 22, 1978).

The settlement of Imperial Valley also led to the development of summer resorts in inland San Diego County. The first settlers were unaccustomed to the summer heat of the desert. They escaped it by spending the summer in the mountains of San Diego County. Francis Blanc, for example, established a camping resort near Julian (Blanc n. d. 22). Resorts were later established at hot springs in Jacumba (San-Diego California Club et al, 1926:65; San Diego Union March 25, 1934, 3:1).

• Highways

Early in the twentieth century automobile highways were constructed through San Diego County to accommodate gasoline-powered vehicles. Charles W. Grise initiated an automobile "stage" service between San Diego and Imperial Valley in 1911 (San Diego Union May 9, 1957, B, 3:1; Zink 1972:22). He later owned the Pickwick Stages that also operated between San Diego and Escondido and Julian (San Diego Union May 9, 1957, B, 3:1; May 18, 1960, B, 2:1-3; OHP, A. Blanc; Zink 1972:23). By 1915 chain-driven trucks were operating between Julian and Foster. Former stage drivers were used to drive trucks, which doubled as buses, carrying passengers as well as freight (Blanc, n. d.:25-26; OHP, A. Blanc). In 1919, however, there were still no paved roads in inland San Diego County; they extended only as far as Camp Kearny (northeast of La Jolla) and Lakeside (San Diego County Planning Commission 1938).

• Population Growth

During the first two decades of the twentieth century the population of San Diego County continued to grow. The population of the inland County declined during the 1890s, but between 1900 and 1910 it rose by about 70 per cent (see Appendix H). The pioneering efforts were over, the railroads had broken the relative isolation of southern California, and life in San Diego County became similar to life in other communities in southern California and the West.

• Native Americans

During the 1880s Native American affairs continued to grow worse. In great part due to the lobbying efforts of Helen Hunt Jackson, who wrote Ramona, a romanticized novel about Native American life during the Mission and Mexican periods, the United States Congress passed the Act for the Relief of Mission Indians. As a result, the lands that had been set aside by Executive Order in 1875 were patented to the various Native American groups in 1893 (see Figure 5). The Mission Indians, as Native Americans of southern California came to be known, continued to support themselves on the reservations, through agriculture, stock-raising, and wage labor (Jackson 1883; Shipek 1978:610-1).

Among the last of the Native Americans to be evicted from their native villages were the inhabitants of Cupa (Warner Springs, SA3), San Felipe (SA3) and other neighboring villages. Attempts had been made to evict them since the late 1850s (U. S. Congress 1957:71; San Diego Union March 19, 1892, 5:3). In 1901 the Supreme Court decided against them, and in 1902-03 they were removed to lands purchased near the Pala Reservation (Hill 1927:154; Graut 1903; Hudson 1964:188; Lummis 1902:16 (4), 16 (5), 1903 19 (5)).

After 1910, the Diegueno living in Mission Valley and other locations in the San Diego area were forced inland, where they subsisted on wild foodstuffs and worked on ranches (Cuero 1970:9, 23, 25).

Modern Phase, 1919-Present

Given the scope of this report, this section deals only with the most important developments in the inland county. After World War I, the history of San Diego County was determined primarily by the growth of San Diego Bay. In 1919, the United States Navy decided to make the bay the home base for the Pacific Fleet (Pourade 1967, VI:263). During the 1920s aircraft industry also established itself at the bay (Heiges 1976:139). The establishment of these industries led to the growth of the county as a whole. However, most of the growth occurred in the north county coastal areas, where the population almost tripled between 1920 and 1930 (see Appendix H).

In the inland county, the economy was still primarily agricultural. Several new irrigation districts were established, at Vista, Ramona and Fallbrook (Adams 1929:297-316; San Diego County Planning Commission 1937:13; California Division of Water Resources 1949:83-84). Henshaw Dam (SA3) was constructed in 1922 (Hill 1927:178; see also Fowler 1963).

During the 1920s, a local consumer market was created in southern California (Raup 1959: 65), and specialized agricultural industries were established in inland San Diego County, particularly in the Inland Valley study area. Between 1926 and 1930, agricultural production (including animal products) increased from a little more than $10 million to almost $20 million (San Diego Agriculture Department, Agricultural production values, 1926-1930). Between 1920 and 1925, the number of grape vines increased from 1.4 million to 2.6 million (Harmon 1964:69). Wineries were established, particularly by Italian immigrants (Harmon 1964:48). Large-scale poultry-raising, which had begun during the 1890s, proliferated, especially near Ramona, but also in the Otay-Hauser Mountain study area (Heilbron 1936:422; Gordinier 1966:134). Between 1924 and 1929, the acreage devoted to avocado groves increased from 24 to 2,500 acres (Oceanside Blade January 18, 1929, clipping in Farm Advisor Files).

- Highways

The road network also expanded. In an effort to attract traffic that usually went to Los Angeles, San Diegans (Ed Fletcher in particular) campaigned for their city to become the terminus of the Lee Transcontinental Highway (a forerunner of present-

FIGURE 5

day Interstate 8). They succeeded in 1923 (Pourade 1967, VI:38). The roads between San Diego and the inland County were also improved. By 1929, roads were paved between San Diego and Escondido and Fallbrook to the north; Ramona and Julian to the northeast; and Descanso, Boulevard and Jacumba to the east (San Diego County Planning Commission, 1938).

However, San Diego still could not be easily reached from the east. Although the Mountain Springs grade was paved in 1928 (Pourade 1967, IV:86), as late as 1950 San Diegans were still plagued by the mountain range to the east that isolated them. The San Diego Planning Department Master Highway Plan (1950:25) included the "Great Southwest Tunnel" as a proposed alternative to the improvement of U. S. Highway 80. The tunnel was to be 34 miles long, and would accommodate a 4-track railroad, an aqueduct, a divided highway. The projected tunnel, epitomized San Diego's repeated attempts to circumvent the Peninsular Ranges.

• Cattle Ranching

With the improvement of transportation, cattle were no longer herded overland. They had in fact not been herded into San Diego since the San Diego and Arizona railroad reached Campo in 1916 (J. L. McCain, personal communication, June 17, 1978; O'Bannon 1977:38). One of the last overland drives to the Imperial Valley took place in 1932 (Reed 1963:84).

There were other changes in the cattle-ranching during the twentieth century. The Campbells of Vallecito (SA3) experimented with the Brahma breed (South 1939:27). In 1934, the Taylor Grazing Act authorized the leasing of certain unreserved public lands to cattlemen (Dana and Krueger 1958:50). Robert Crawford was one of the ranchers who made use of the law, leasing public lands in Canebrake Canyon (SA3; Morin and Hedges 1977). After World War II, cattlemen in the Otay-Hauser Mountain study area, rather than growing their own feed and alfalfa, began using the commercial feed lot that had been established in the Imperial Valley (D. McCain, personal communication, June 17, 1978; Boswell 1967).

• Natural Preserves and Recreation

Early in the twentieth century lands began to be set aside for the preservation of natural resources. In 1907, the newly established San Jacinto National Forest (now Cleveland National Forest) was extended into San Diego County; in 1908 San Diego County headquarters were established in San Diego (Gordinier 1966:116; Acts creating the Cleveland National Forest, Historical Collection, Cleveland National Forest, San Diego Office).

The control of forest fires was one of the responsibilities of the Forest Service. The San Diego County cattlemen wanted to continue their traditional practice of burning the underbrush in order to promote new growth; they also claimed it reduced the danger of large forest fires. Their recommendation was rejected (Gordinier 1966:16). The benefits of controlled burning have since been recognized, and the controversy over its use, now compounded by residential areas within the forest, has continued to the present day (Phillips 1976:74; E. Donohue, personal communication, June 18, 1978).

Recreation became a necessity for the urban population of San Diego County during the 1920s. In 1926, lands surrounding Mount Laguna (SA3) were set aside as a recreational area by the Department of Agriculture (Phillips 1976:74). In 1932, 2,732 acres of land were donated to the state of California for the creation of a state park in the Borrego Desert (Lindsay 1973:89). In 1933, more than 185,000 additional acres of unappropriated land became part of what is now known as Anza-Borrego Desert State Park. In 1936, despite the objections of settlers and cattle ranchers, lands in Vallecito Valley and Box Canyon also became part of the Park (Bellow, 1940; Lindsay 1973:93). Cuyamaca Rancho State Park, located within the former Cuyamaca Rancho, was created in 1933 (Bloomquist, 1966, I:21, 30; II:2). These two parks began to be heavily used during the 1940s (Bloomquist 1966, II:5; Lindsay 1973:99).

Late in the twentieth century it was decided to close the state parks to their traditional users, the cattle ranchers. In the Cuyamaca Rancho State Park, grazing leases were cancelled in 1956. Grazing was also prohibited in Box Canyon and Little Blair Valley (Bloomquist 1966, II:14). In the Anza-Borrego State Park, grazing leases were terminated in 1972 (Lindsay 1973:112).

The residents of Imperial Valley continued to use the summer resorts established in the McCain Valley study area. The resort at Jacumba (Hot Springs), for example, thrived during the 1920s and 1930s; in the summer the population would jump tenfold (San Diego Union March 25, 1934, 3:1). After World War II, however, the resort declined. Air conditioning allowed people to live comfortably in the desert, and more reliable cars allowed them to travel all the way to the coast.

- Water Resources and Urbanization

Up until World War II, San Diego relied entirely on local water resources. After the War, however, the tremendous growth of its population forced it to seek water from the Colorado River. The first barrel of the Colorado River Aqueduct was constructed through the Inland Valley study area by the United States Navy in 1947 and the second was completed in 1954 (California Department of Water Resources 1963:19-21).

The availability of Colorado River water intensified the urbanization of the areas near San Diego. Since early in the twentieth century, rising land prices in the areas surrounding early farming communities had forced ranchers and farmers to sell their lands for residential developments (Harmon 1964:65, 71; Gordinier 1966:132). This process first occurred in the areas directly east of San Diego (i.e., El Cajon). The Inland Valley study area and the western portion of the Otay-Hauser Mountain study area have been urbanized more recently. Poway, Rancho Bernardo and other areas in the Inland study area became suburban communities. Ranches in the desert areas were also subdivided (San Diego Union July 16, 1978, B-3:1-6). Thus, former ranchos became cities (see Robinson, 1948).

- Native Americans

As the Anglo American population grew during the 1920s, Native American squatters were forced off the land. Many emigrated to Baja California (Cuero 1970:10, 26). On the reservations, the Native Americans of San Diego County provided for themselves

despite the poverty of the reservation lands and the lack of water. Relatively few of them migrated to the coastal cities (Cook 1943b:556). After World War II, however, drought, the diversion of riparian waters into other stream basins and the lowering of the water table reduced the possibility of farming on the reservations. Employment opportunities were poor.

In 1953, with the passage of Public Law 280, Native Americans on the reservations became subject to the criminal and civil jurisdiction of the state and ceased to be wards of the Bureau of Indian Affairs. As such, they were required to learn to cope with state, county, and federal organizations on their own.

Recently, new organizations such as Kumeyaay, Incorporated, the All-Mission Indian Housing Authority and the Cupa Cultural Center at Pala, have been formed to further the interests of the Native Americans (Shipek 1978:610-18).

CONTEMPORARY ETHNIC GROUPS

Two predominant ethnic groups are represented in inland San Diego county, Mexican-Americans and Native Americans. Both groups have an established history in the area. (See the Prehistory and History sections.) Of course many of the Anglo-Americans who settled in the study areas came from a variety of European backgrounds; for example, the granite workers of Swedish descent and the wine-makers of Italian descent mentioned in the History Section. Until recently, few blacks have lived in San Diego County. By 1900, there were only 77 blacks living in inland San Diego County. The first known black resident was Nathan Harrison, who lived on the slopes of Smith (Palomar) Mountain; Negro Canyon is named after him (Carlton 1977: 50). Of the few blacks in the back country most were farmers and a few were cowboys. A. H. Coleman was a prospector in the Julian area.

MEXICAN AMERICANS

People of Spanish descent have been in California since 1769. The children of the first settlers were the Californios. Their decline is described by Pitt (1966). After 1848, Mexicans continued coming into southern California, as prospectors and later as settlers (Guinn, 1907). After irrigation was developed Mexicans came to work on the orchards, ranches and farms of southern California, especially after the Revolution of 1910 (McWilliams 1968:217-221). The majority settled in Los Angeles and other coastal communities. Relatively few lived in inland San Diego County, where the opportunities for work were scarce.

The Otay-Hauser Mountain study area, being located along the border, has had a long history of relations with Mexico. Until 1912, when a fence was built along the border, cattlemen roamed rather freely between the two countries (J. L. McCain, personal communication, June 17, 1978). During the nineteenth century there was considerable smuggling of cattle across the border by Mexicans (McCain 1955:23). At Tecate, the Things had a thriving business and employed Mexicans (McCain 1955:20-21:OHP, Thing). Sometimes tension between the two peoples exploded, as it did at the Gaskills' Campo store in 1875 (Pourade 1964, IV:253).

Today, Mexicans continue to cross the border in the Otay-Hauser Mountain study area. There are Mexican American communities in towns located throughout the inland county, particularly in the Inland Valley study area (L. Mendoza, personal communication, July 14, 1978). In other areas, for example, Julian (R. Redding, personal communication, June 18, 1978), there are very few.

Recently, Mexican Americans have developed a strong sense of their heritage; and the history of the Southwest, which is closely tied to Mexico's, is being reinterpreted. There is, however, little documentary information on the history of Mexican County in particular (Garcia, 1972; 1977). As Garcia (1977:53) points out, interviews with older residents are probably the best way to obtain information on the history of Mexican Americans.

NATIVE AMERICANS

The history of the Native Americans represented in inland San Diego is compiled in the Prehistory and History sections of this report. A mountain, Cuchama (Tecate Mountain), is reported in a published document (Saniford 1977) to be sacred. In order to identify additional sites that are of "special religious or social significance" spokespersons of reservations were contacted as was the Native American Heritage Commission. As a result, representatives of four reservations provided information on the specific location of special sites. Another individual, the owner of what was Laguna Reservation, also identified site areas. Four spokespersons refused to give any information. The two most common reasons cited were: (1) they felt the sites would be better protected if only Native Americans know of them, and (2) a reluctance to give such information to the BLM. A number of individuals indicated that they would send the requested information by mail.

In general, the response was good. Five people gave information over the telephone and six were interviewed. Because of the sensitive nature of the information and the commitments made regarding the distribution of such information, only a brief summary of the contacts can be provided in this document. Specific information has been provided to the appropriate agencies, including the Native American Heritage Commission and the BLM. Most of the identified areas were cemeteries. A general concern was also expressed for gathering areas although no locations were obtained. During the course of the interviews several trails and habitation sites were also identified. In one case, concern was expressed that a specific trail has become overgrown with shrubs and hasn't been kept clear.

Although the intent was to identify specific site locations, most information obtained was more general, although extremely useful. For example, Thomas Lucas provided invaluable information on the settlement and subsistence activities of his band during the early 1900s, and Katherine Saubel and Alvino Siva described the origin of the Sivas. All three of these individuals expressed great concern that the oral history of Native Americans is being lost because it is not being written down.

RESEARCH DIRECTIONS AND SUGGESTED MANAGEMENT OPTIONS

The following discussions address questions and issues that are relevant to the understanding of the prehistory and history of San Diego County and the study areas. As will be noted in the discussion, many issues remain unresolved. Examples of research problems relevant to the study areas are presented. An outline of suggested management options concludes this section.

RESEARCH DIRECTIONS

Prehistory

In spite of the amount of research that has been conducted in San Diego County, few issues have been resolved regarding the prehistory of the area. For example, there is a notable lack of information specific to the paleoenvironment of San Diego. Although the existence of Early Man in southern California is still the subject of a heated debate, a general chronological sequence, (i.e., San Dieguito, Milling Stone Horizon and Late Prehistoric) is accepted by most archaeologists. The geographical distribution within San Diego County, and particularly within the study areas, of these archaeologically-defined time periods is not known. The question of continuity through time of the culture history of the area must be researched and the populations represented by these periods identified. In addition, the cultural and environmental processes that contributed to the development of the lifeways represented by the archaeological record can only be delineated through further investigations. Even for early historic times, information on Native American activities in the study area is limited.

In order to define the prehistory of San Diego County further, archaeological research is necessary. Comparative studies of excavations conducted in the county, along with large-scale, systematic surveys must be undertaken to provide answers to the issues discussed above.

Many of the BLM-administered lands in the county are widely scattered, relatively small in area and located on mountain tops. While a survey of these lands would provide BLM with a cultural resource inventory, the ability to investigate broad research topics (e.g. the identification of prehistoric land use patterns in San Diego County) would be restricted. Any well-documented archaeological study can contribute to the data base that is necessary for definition of the prehistory of San Diego County and the study areas. This is also the case for archaeological investigations on BLM-administered lands within the study area. In addition, because most BLM-administered lands are located in inland San Diego County, which remained relatively unaffected by non-Native American populations until this century, BLM does have the opportunity to draw on a special resource base -- Native Americans who remember past cultural practices.

There are an unlimited number of more specific research problems that could be investigated. The following is a list of example research problems that could be investigated relative to the distribution of large parcels of BLM lands within the study areas:

(1) Most BLM-administered lands are located within the territory Heizer (1978) has defined as Tipai and more specifically the territory Kroeber attributed to the Southern Diegueno. If the sampling strategy used by the Desert Planning Staff archaeologists in the Yuha Planning Unit are applied in southwestern San Diego County, this would allow for comparative data from the two areas and may result in some statements on the settlement patterns of the Southern Diegueno or Tipai.

(2) Comparable archaeological investigation of the Otay-Hauser Mountain area and the southern portion of the McCain Valley area, along with Native American input and a detailed literature review, may help to resolve the discrepancy between the territorial boundaries presented by Kroeber (1923), Heizer and Whipple (1971) and Heizer (1978). One major problem with this type of investigation, however, is that most of the BLM-administered lands in the Otay-Hauser Mountain study area are in rugged, mountainous areas and only a small percentage of valley lands are represented.

(3) Information generated by an archaeological investigation of BLM-administered lands to the east and southeast of Cuyamaca State Park could contribute to an evaluation of the prehistory and history of the Indians of the Cuyamaca Mountains. True (1970:56) has identified the San Felipe, Mason, and Vallecito valleys as places where the Cuyamaca Indians wintered. Thomas Lucas (1978: personal communication) has identified specific groups that exploited these valleys. The use of recorded site data (e.g. Bell, 1975), collection of informant information, site survey data and incorporation of True's data from Cuyamaca could provide invaluable information on settlement-subsistence patterns of the Diegueno and on Colorado River and Hohokam influences on the Diegueno. Depending on the level of study, the researcher may even by able to investigate intra-group patterning for the Cuyamaca Indians. A survey of only BLM-administered lands in the area, however, would not provide a comprehensive study of settlement-subsistence pattern in the area.

(4) A study of the BLM-administered lands to the east and south of Julian comparable to that being conducted in the Anza-Borrego Desert State Park would help define the relationship of archaeological remains to environmental factors. Taken together these state and federal lands could represent an east-west transect that crosses almost every vegetation and terrain type represented in the San Diego County. Analysis of the data generated from comparable surveys could contribute to the development of hypotheses about the distribution of site types, the density of sites, etc. relative to types of environmental factors.

(5) A study of BLM-administered lands in the northern portion of the McCain Valley study area could contribute significantly to the understanding of the settlement-subsistence patterns of the Mountain Cahuilla. Because Strong (1929) provides information on land ownership for specific Mountain Cahuilla clans, his information could provide a valuable dimension to the study by directing the investigator to present day descendents of the families who exploited specific areas. This is also the case for the contiguous BLM-administered lands in the San

Felipe Hills. Surveys, although non-systematic, have been conducted in the area by the Pacific Coast Archaeological Society; and this data, along with Strong's (1929) ethnographic data and a survey of the San Felipe Hills could contribute to an understanding of Cupeno settlement patterns.

(6) Within the Inland Valley study area almost all BLM-administered lands are less than a square mile in area and most of these parcels are located on mountain tops. One area, Rodrigues Mountain, does have contiguous BLM-administered lands. These lands are just to the east of one of the areas surveyed and designated as Pauma by True, Warren and Eudey (1961). In addition, these lands are located in the general area of the core of Luiseno occupation and along the boundary that True (1966) has identified between the Luiseno and Diegueno. Studies in this area could perhaps provide additional information on the distinction, based upon artifact assemblages, of Yuman and Shoshonean groups. Data may be collected that could contribute to a more definitive outline of the Pauma complex.

History

The historiography of San Diego County is at what one can consider a "local history" stage. Much data is available, but often in scattered and unpublished sources. The histories of some towns and prominent families have been written, preliminary interviews have been conducted with long-time residents, and analyses have been made of particular aspects of its history. The broad patterns of county history, which are described in this report, are relatively well known. Because analyses have not been conducted on the specific historical development of San Diego County's hinterland, there is ample opportunity for research in local history.

San Diego County is well suited to the study of the interactions between cultures and the environment. The development of water resources has been a basic activity. The mild Mediterranean climate along the coast and the bay at San Diego have attracted settlers to the area, but the Colorado Desert to the east, the rugged Peninsular Ranges, the lack of mineral resources and the small, relatively arid, scattered irrigable valleys have slowed its development. Within the county, there are variations of the basically Mediterranean climate, and each of these are associated with particular types of settlement. In a little more than a century, San Diego County was inhabited by four different cultures, each of which made a distinctive adaptation to the natural environment. Because of the strong influence of climate and physiography, and because of the relatively rapid succession of cultures, San Diego County lends itself to the study of comparative history and to the development of cultural ecology models.

In addition, few historical archaeology projects have been conducted in inland San Diego County. Archaeological excavations have been conducted outside the BLM study areas, primarily at Mission San Diego, the Presidio, Old Town and Mission San Luis Rey (See Ezell, 1968; Ezell et al.; 1968, Ezell and Broadbent, 1972; Harrington, 1958; Moriarty, 1969, 1971; Moriarty and Weyland, 1971). Elsewhere in the county, however, there has been little historical archaeology. Some EIR's and other archaeological survey reports make references to historical events, but they primarily focus

on prehistoric materials (e.g., Carrico 1977; Morin and Hedges 1977; Moriarty 1975; May 1976b). Although "notable" sites, particularly Spanish and Mexican ones, are not likely to be found on BLM lands, the BLM does have the opportunity to gather basic data on the distribution, chronology and technology of early farming, irrigation, well-drilling, homesteading, cattle ranching, mining and prospecting.

Discussed below are specific and general questions that could be investigated in inland San Diego County, using a combination of documentary and photographic research, oral history and historical archaeology.

(1) Up until the 1860s, the Native Americans were the principal inhabitants of the inland county. There is much to be learned about the location and distribution of their villages; the extent to which they sowed wild grass seeds and other crops (Shipek 1977); the total non-coastal population (Killea, personal communication, July 14, 1978); the exact causes of the "Garra Uprising" (Phillips 1975); raiding tactics; their interaction with the Californio ranchers and the persistence of traditional gathering into the twentieth century (cf., Cuero 1970; Morin and Hedges 1977).

(2) Little is known about the details of life during the late nineteenth century, particularly during the 1870s, when Anglo American settlers began to populate the back country. Little is known about the Sonorans who lived in the inland county valleys (e.g., San Pasqual, cf., Rustvold, 1968) and the early Anglo American settlers such as the Harrals, who lived in the Julian area before it was overrun with prospectors (Ellsberg, 1972:17). Who were the Southern emigrants who came to San Diego County during the late 1860s? How many squatters were there in the 1870s? What is the history of the early farming community of Ballena, which thrived during the Julian gold mining boom of the 1870s and later declined. A study of these questions would reveal much about the settlement of the inland county.

(3) Also interesting subjects of research would be the early history of grain-farming, beekeeping, sheep-raising, irrigating (including failures) and prospecting and mining. In particular, there is much to be learned about late nineteenth and early twentieth century cattle ranching: its gradual movement eastward; the exploitation of the desert ranges; special practices such as burning thorns off cacti to feed cattle in dry years (J. L. McCain, personal communication, July 17, 1968); the types of grasses exploited; the seasonal rounds; the extent and effects of overgrazing.

(4) There is enough data available to reconstruct the evolution of the San Diego County transportation network (see Figure 3). It is known that early historic transportation routes generally followed established Native American trails (Lyon 1851; Moriarty 1968 6(3):15; Rensch 1955:194). Anglo American wagons, however, required easier grades than pedestrian or horseback travel, and this led to the development of new routes that deviated from the Native American trails. The construction and location of later roads was also affected by natural, economic, political and technological factors. A precise historical geography of transportation systems in the county would clarify the pattern of settlement of inland San Diego County.

(5) There are also several larger questions that could be investigated. Raup (1959:60) has compared southern California with the Great Plains; both areas had a lack of water and fencing materials and, as a result, conflicts arose between cattle ranchers and farmers. A comparative study of the two areas would be of great value. (See Webb 1931.) An investigation of the particular succession of agricultural commodities (cattle, wool, honey, grain, fruits, poultry, etc.) would reveal the influence of important factors related to the settlement of San Diego County. Analysis of census reports and other records would enable comparisons to be made among the various climatic-physiographic regions in the inland county.

(6) It would also be useful to compile data on the technological history of the inland county, including the types of well-digging machinery used; early irrigation systems; and house-building materials (adobe, milled lumber, stone, ocotillo, etc.) This would be invaluable for future archaeological research.

SUGGESTED MANAGEMENT OPTIONS

The Bureau of Land Management is required to identify, evaluate and protect prehistoric and historic cultural resources on public lands under its jurisdiction and to insure that BLM initiated or authorized actions do not inadvertently harm or destroy non-federal cultural resources. The recommendations outlined below are suggested in order to accomplish this goal.

In many areas of San Diego County, the number and type of cultural resources located on BLM lands are probably limited by the fact that the lands the BLM manages are least favorable for settlement. Most of the Native American habitation sites (see Appendix F), the missionaries' inland establishments, Mexican land grants (see Figure 4) and early Anglo-American farms and communities were located on lands where water, pasture and/or irrigable lands were available. These lands were the first to be taken out of the public domain and patented as private property during the 1860s and 1870s. By the twentieth century, technological developments and population pressure led to the expansion of settlements onto what had previously been considered unfavorable lands. This further reduced the acreage of lands remaining in the public domain. Lands presently administered by the BLM include areas with little or no water and expanses of steep mountain slopes.

Because of the nature of the distribution of these lands, it is felt that the standard Class II procedures (i.e., in this case a stratified random sample of BLM-administered lands in each of the three study areas), while providing an inventory of cultural resources, would probably not contribute significantly to the understanding of the prehistory or history of the study areas. In addition, little information would probably be gained that would provide a framework to assess the significance of individual sites located during a survey of this type. In other words, a sample survey of BLM lands would probably not yield the full range of cultural values present in San Diego County or the study areas.

For these reasons, alternative strategies for a Class II inventory are provided. If the recommendations are followed, they should help afford protection of cultural

resources on BLM-administered lands, provide a representative sample of the cultural resources and contribute to better understanding of the prehistory and history of inland San Diego County.

The following recommendations are both general and specific and are presented as suggested management options with regard to those BLM-administered lands in San Diego County. The recommendations are not necessarily applicable and, in some cases, would be totally inappropriate if applied to other lands managed by BLM.

1. Information on places of religious or social significance cannot be obtained over a short period of time. BLM should, therefore, institute an active on-going Native American contact program. Representatives of BLM should contact those Native Americans included on the list prepared by the Native American Heritage Commission in addition to others who are identified as knowledgeable during the course of the contact program. The primary purpose of these contacts should be to identify those areas that individual Native Americans are familiar with. When a specific project is proposed on BLM-administered lands or is authorized by BLM, the individuals familiar with the area that may be affected could then be contacted. In addition to ensuring that sites of religious or social significance are identified, over a period of time duplication of effort could be avoided.

2. Cultural resource surveys should be conducted on BLM-administered lands in San Diego County. The selection of appropriate survey strategies should be based upon pre-selected research questions that are appropriate to the area being surveyed.

3. In order to assure better protection of the cultural resource values represented on BLM-administered lands, priority should be given to surveying areas that are currently being subjected to impacts and those areas that are likely to be in the near future. San Diego County has conducted studies that address expected growth and development in San Diego County. These example studies should be consulted to identify areas that are likely to be impacted as a result of development in San Diego County. Preservation plans should be prepared for those properties that may be subject to such impacts. The San Diego Comprehensive Planning Organization, Historic Preservation Advisory Committee should also be consulted.

4. Prior to the preparation of the cultural resource section that is to be included in the McCain Valley Environmental Impact Statement, on-the-ground surveys should be conducted to identify the range of cultural resources values represented. It is suggested that initial sampling and survey methodology follow which was applied in the Yuha Planning Unit. Upon completion of the sample survey, a purposive survey could be conducted to evaluate areas that are likely or known to have cultural resources. Members of the McCain family can provide data on the historical land use patterns in the valley and Native Americans should be contacted regarding places of special religious or social significance. Prehistoric cultural resources are reported in McCain Valley. Historical resources may include rock and ocotillo fences, such as those in the Crawford Ranch area (Morin, personal communication, May 25, 1978); rock

dams and other types of water control constructions, such as those constructed by the Harper brothers east of Blair Valley in 1918-22 (Reed, 1963:64); troughs, tanks and pipelines; shacks that served as shelter during roundups; and trails (Reed 1963).

BLM should nominate to the National Register of Historic Places those cultural resource properties that appear to meet the National Register criteria of evaluation. Priority should be given to those properties previously identified in the Step I BLM Management Framework Plan for San Diego County and properties described in the text of the Overview, for example, Dos Cabeas.

Preservation Plans should be prepared for significant cultural resource properties.

Since BLM manages lands near the Julian-Banner, Pala and Mesa Grande Districts (Weber 1963: Plate 9) considerations should be given to coordinating the identification and management of mining sites and roads with the Julian Historical Society, which has developed its own interpretive site at the George Washington Mine.

BLM could aid the Pacific Southwest Railway Museum Association in preserving the San Diego, Arizona and Eastern railroad (formerly the San Diego and Arizona) as a historical landmark. The railroad tranverses lands managed by BLM.

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Bean discusses Cahuilla language and environment, territory, culture, technology, games and music, hygiene and diseases, social and political organization, marriage and kinship, war and trade, cosmology, ritual, history and synonymy.

Bean, L. J.
1978b Social Organization. In Handbook of North American Indians, California, Vol. 8., edited by Robert F. Heizer, pp. 673-682. Smithsonian Institution, Washington, D. C.

Bean L. J. and H. Lawton
1965 The Cahuilla Indians of Southern California. Malki Museum Press, Banning, California.

A short informative pamphlet, written for the layman. Informative material is included.

Bean, L. J. and H. W. Lawton
1967 A Bibliography of the Cahuilla Indians of California. Malki Museum Press, Banning, California.

Bean, L. J. and H. W. Lawton
1973 Some explanations for the rise of cultural complexity in native California with comments on proto-agriculture and agriculture. In Patterns of Indian burning in California: ecology and ethnohistory, by H. T. Lewis, pp. v-xlvii. Ballena Press Anthropological Papers 1.

Bean and Lawton offer an excellent summary of references to burning practices and possible agricultural undertakings of the Southern California Indians. A discussion on the reevaluation of subsistence patterns is included. Possible hypothesis for archaeological testing are offered.

Bean, L. J. and W. M. Mason
1962 Diaries and accounts of the Romero Expeditions in Arizona and California 1823-1826 . Palm Springs Museum, Palm Springs, California.

These diaries are valuable documents for understanding the movements between southern California and the Southwest. They provide information on ethnohistory and routes of travel.

Bean, L. J. and K. S. Saubel
1961 Cahuilla ethnobotanical notes: the aboriginal uses of oak. Archaeological Survey Annual Report, 1960-1961: 237-245. University of California, Riverside.

Bean, L. J. and K. S. Saubel
1963 Cahuilla ethnobotanical notes: the aboriginal uses of the mesquite and screwbean. Archaeological Survey Annual Report 1962-1963: 51-78.; University of California, Los Angeles.

Bean, L. J. and K. S. Saubel
1972 Temalpakh: Cahuilla Indian knowledge and usage of plants. Malki Museum Press, Banning, California.

The most comprehensive ethnobotany available for southern California Indian groups. Much of the data was gathered from Cahuilla Native American informants, and is augmented with information from previous ethnobotanical studies. A brief discussion of physical environment and settlement subsistence patterns is presented.

Bean, L. J. and F. C. Shipek
1978 Luiseno. In Handbook of North American Indians, California, Vol. 8, edited by Robert F. Heizer Smithsonian Institution, Washington.

In this section, Luiseno language, external relations, territory and environment, settlement pattern, ownership and property, subsistence, technology, structures, adornment, music and games, social and political organization, life cycle, ritual, cosmology, history, cultural persistence, synonym and sources are described.

Bean, L. J. and C. R. Smith
1978 Cupeno. In Handbook of North American Indians, California, Vol. 8, edited by Robert F. Heizer Smithsonian Institution, Washington.

A discussion of Cupeno language and territory, culture, history, synonymy, and sources are included in this section.

Bean, L. J. and S. B. Vane
1977 California Indians: primary resources: a guide to manuscripts, artifacts, documents, serials, music and illustrations. Ballena Press Anthropological Papers 7. Ramona, California.

This is an excellent guide.

Beattie, G. and H. Pruitt
1951 Heritage of the Valley. Biobooks, Oakland.

This is a classic history of the San Bernardino Valley. It is included here because the Beatties did research on the Mexican mail route through Warner's Pass and because of certain similarities between inland San Diego County and the San Bernardino Valley.

Beck, W. and Y. Haase
1974 Historical atlas of California. University of Oklahoma Press, Norman.

This is a useful reference atlas.

Begole, Robert S.
1976 A continuing archaeological survey in the Anza-Borrego Desert State Park: 1975-1976 report. Pacific Coast Archaeological Society Quarterly 12 (2): 1-24.

The report describes the rock alignments located during surveys and includes hypothesis to explain these features.

Bell, Daniel A.
1975 An archaeological survey for the proposed development of Mason Valley Ranch, Mason Valley, California. Ms. Archaeological Research Unit, University of California, Riverside.

Bell describes the methods and results of the 2,300 acre survey in Mason Valley.

Bellow, Walter

1974 Record compiled from Public and private records for the citizens of San Diego County concerning Borego, Vallecito and Carrizo Units. Ms. Julian Pioneer Museum.

This report includes estimates of the acreage needed to support cattle on these desert and semi-desert areas.

Bennyhoff, J. A.

1958 The desert west: a trial correlation of culture and chronology. University of California Archaeological Survey Report 42: 98-112.

Berger, Rainer and W. F. Libby

1965 UCLA radiocarbon dates V. University of California at Los Angeles. Institute of Geophysics and Planetary Physics. Publication 480.

This source lists radiocarbon dates including some from San Diego County.

Berryman, S. R.

1977 Archaeological investigation of the Lewis Lot Split. Ms. Toups Corporation, La Jolla.

Bettinger, R.

1971 World views and archaeological investigation in interior southern California. Archaeological Survey Annual Report 1971: 187-201 University of California, Los Angeles.

Bettinger, R. and R. E. Taylor

1974 Suggested revisions in archaeological sequences of the Great Basin in interior southern California. Nevada Archaeological Survey Research Paper 5: 1-25.

Bibb, Leland E.

1972 The location of the Indian Village of Temecula Journal of San Diego History 18: 3, 6-11.

Jay McCown is wrong in village placements.

Bieber, Ralph (ed.)

1937 Southern Trails to California. Arthur Clark, Glendale, California.

This is a general discussion of the use of the southern trails to California, including the Southern Emigrant Route.

Bieber, R. B. and A. B. Bender (eds.)

1938 Exploring Southwestern Trails 1846-1854. Arthur Clark Company, Glendale, California.

Diaries of travel, including those members of the armies of the west, are included in this anthology.

Bien, G. S. and L. J. Pandolf
1972 La Jolla natural radiocarbon measurements VI. Radiocarbon 14.

This source lists C^{14} dates.

Birdsell, J. B.
1968 Some predictions for the Pleistocene based on equilibrium systems among recent hunter-gathers. In Man the Hunter, edited by R. Lee and I. De Vore, pp. 229-40. Aldine, Chicago.

Bischoff, J. L., R. Merriam, W. M. Childers, and R. Protsch
1976 Antiquity of man in America indicated by radiometric dates on the Yuha burial site. Nature 261: 128-129.

This article discusses the radiometric dating of caliche deposits from human burial and the validity of the dates.

Black, S. T.
1913 San Diego County, California. S. J. Clarke, Chicago.

This is one of the many county histories; not very useful for the inland county area.

Blake, W. P.
1857 Geological report. In Explorations and surveys for a railroad route from the Mississippi River to the Pacific Ocean. Vol. 5, part 2. United States War Department, Washington.

Blake accompanied Lt. Williamson in his explorations of the Warner's Pass Area.

Blanc, F. L.
n. d. Short history of my life dedicated to my children. Ms., Julian Pioneer Museum.

This is a first-hand account of a preacher in Julian who went into the building business, owned a camp for Imperial Valley residents and operated a trucking company. It is an interesting account.

Blanc, R. P. and G. P. Cleveland
1961 Pleistocene lakes of southeastern California. State of California Division of mines, Mineral Information Service 14 (4): 1-14.

Blick, J. D.
1976 Agriculture in San Diego County. In San Diego--An introduction to the area, edited by Philip Pryde, pp. 121-135. Kendall/Hunt Publishing Company, Dubuque, Iowa.

This is a useful overview of agriculture in San Diego County.

Bloomquist, R. A.
1966 A history of Cuyamaca Rancho State Park. Ms., SDHS Library, Serra Museum.

This report summarizes the history and prehistory of the park.

Bloomquist, R. A.
1970a Historic Palm Springs Desert Mag 33:4, 8-9.

Bloomquist, R. A.
1970b "Through Borrego Badlands" Desert Mag 34:2 26-29.

Boas, F.
1896 Anthropometric observations on the Mission Indians of Southern California. In Proceedings of the American Association for the Advancement of Science for 1895 44: 261-269. Salem, Massachusetts.

Bolton, H. E.
1917 The mission as a frontier institution in the Spanish-American colonies. American Historical Review 23: 42-61.

An influential, early interpretation of the function of the missions in Spanish America.

Bolton, H. E. (ed.)
1930 Anza's California Expeditions 1774-1776. 5 Vols. University of California Press, Berkeley.

This is the standard translation of the diaries of the principals of the Anza expeditions. Anza used the San Carlos Pass to the East of Warner's Pass.

Bolton, H. E.
1931 In the South San Joaquin ahead of Garces. California Historical Society Quarterly 10(3): 211-219.

This is one of the articles that led Reusch (1955) to determine Fages' exact route.

Boscana, G.
1846 Chinigchinich: a historical account of the origin, customs and traditions of the Indians at the missionary establishment of St. Juan Capistrano, Alta California; called the Acagchemem nation. In Life in California, by A. Robinson, pp. 230-341. Wiley and Retnam, New York.

Boswell, T. D.
1967 Beef cattle feeding in Imperial Valley, California--a study in economic geography, M. A. Thesis, San Diego State College.

This thesis analyzes the development of commercial feed lots in the Imperial Valley. Particularly after World War II, San Diego County cattle were fed in these lots.

Boyle, M. B.
1968 San Luis Mission: report on the historical and archaeological study of its primary construction and Indian villages associated with it (1789-1913). Ms. San Luis Rey Mission.

Boynton, M.
1943 *Stories and legends of the Palm Springs Indians by Chief Francisco Patenclo as told to M. Boynton.* Palm Springs Desert Museum. Palm Springs. (See also Palencio, F.).

Brackett, R. W.
1939 *A history of the ranchos of San Diego County, California.* Union Title Insurance and Trust Company, San Diego.

This is a brief description of the Mexican land grants of San Diego County.

Brand, D. D.
1961 The early history of range cattle in Northern Mexico, *Agricultural History* 35 (3): 132-139.

The article describes the background of Spanish and Mexican cattle ranching in the Southwest.

Brandes, R.
1966 First summary report on the University of San Diego project at Mission San Diego de Alcala, summer session, 1966. Ms. University of San Diego.

Brandes, R.
1967 Second, third, and fourth summary report on the University of San Diego project at Mission San Diego de Alcala. Ms. University of San Diego.

Bright, M.
1965 A field guide to southern California languages. *Annual Reports of the University of California Archaeological Survey* 7:389-408. Los Angeles.

Bright, M.
1965 California radiocarbon dates. University of California *Archaeological Survey Annual Report*. Los Angeles. pp. 363-375.

Marcia Bright's paper lists all the Californian C-14 dates prior to 1965.

Brott, C. W.
1966 How stones became tools and weapons. In *Ancient Hunters of the far west*, edited by R. F. Pourade, pp. 139-193. Copley Press, San Diego.

Brott summarizes Roger's work and conclusions on San Dieguito sites in California, Nevada and Baja California. Selected sites are described and stone tools typical of each phase are sketched and typed.

Bryan, A. T. and R. Gruhn
1964 Problems relating to Neothermal climatic sequence: American Antiquity 29: 307-315.

Bryan and Gruhn propose that although the climatic sequence of Antevs is generally verified, the time boundaries are not necessarily everywhere the same.

Bull, C. S.
1976 Results of an archaeological survey of the Oakridge Properties, San Diego County, CA. Ms, RECON, San Diego.

Burcham, L.
1956 Historical geography of the range livestock industry of California. Ph.D. dissertation, University of California, Berkeley.

This is a comprehensive analysis of the development of the range cattle industry in California from the Spanish period on. It describes the evolution of California's vegetation, as well as pertinent environmental and geographic factors related to cattle ranging.

Burcham, L. T.
1961 Cattle and range forage in California: 1770-1880. Agricultural History 35(3): 140-149.

This is a summary of Burcham (1956)

Butler, B. R.
1972 The Holocene in the Desert West and its cultural significance. In Great Basin Cultural Ecology, a Symposium, edited by Don D. Fowler, pp. 5-12. Desert Research Institute Publications in the Social Sciences 8.

California Department of Parks and Recreation
1976 Inventory of historic resources. Sacramento.

California Department of Public Works, Division of Water Resources
1930 Report to legislature of 1931 on state water plan. Bulletin 25.

California Department of Public Works, Division of Water Resources.
1933 Value and cost of water for irrigation in coastal plain of southern California. Bulletin 43.

This report includes a discussion of agricultural lands in San Diego County, as well as of the cost of irrigation water.

California Department of Public Works, Division of Water Resources.
1935 San Diego County investigation. Bulletin 48.

This is a useful overview of the water resources of San Diego County.

California Department of Public Works, Division of Water Resources.
1949 San Dieguito and San Diego Rivers investigation. Bulletin 55.

This report discusses the hydrology of the San Dieguito Basin. It includes a short history of water utilization.

California Department of Water Resources.
1963 San Diego County land and water use survey, 1958. Bulletin 102.

This report discusses land and water use in San Diego County.

Campbell, E. W. O.
1931 An archaeological survey of the Twenty Nine Palms region. Southwest Museum Papers 7. Los Angeles.

Campbell, E. W. C.
1936 Archaeological problems in the southern California deserts. American Antiquity 1 (4): 295-300.

A brief discussion of point types and their possible cultural affiliation.

Campbell, W. B. and J. R. Moriarty III
1969 The struggle over secularization of the missions on the Alta California frontier. Journal of San Diego History 15 (4):3-13.

This is a useful description of secularization.

Carlton, R. L.
1977 Blacks in San Diego County, 1850-1900. M.A. Thesis, San Diego State University.

This thesis analyzes the nineteenth century blacks in San Diego County, based on census records. It includes an account of the black families of Julian.

Carrico, R. L.
1974a Indian habitational sites in San Diego County.

This is a compilation of Native American sites in San Diego County.

Carrico, Richard L.
1974 Archaeological survey of the Jamacha Hollow Residential/Jamacho Hollow Medical Facility development. Ms, WESTEC Services, Inc., San Diego.

Carrico, R. L.
1974b Archaeological survey of the Conrock-Steetwater River project. Ms, WESTEC Services, Inc., San Diego.

Carrico, R. L.
1977 Cottonwood Medows, archaeological survey report. Ms.

An appendix (pp. 5-7) discusses the history of the Jamacha area.

Castillo, E. D.
1978 The impact of Euro-American exploration and settlement. In Handbook of North American Indians, California, Vol. 8, edited by Robert F. Heizer, Smithsonian Institution, Washington, D. C.

This reference discusses three periods of exploration and settlement (Spanish, Mexican, and American). Castillo also includes discussions on the "Quaker Policy", Land Status and Legal Status, and Termination.

Castillo, E. D.
1978a Twentieth-century secular movements. In Handbook of North American, California, Vol. 8, edited by Robert F. Heizer. Smithsonian Institution, Washington, D. C.

Cesar, J.
1879 Cosas de Indio de California. Ms. Bancroft Library, Berkeley.

Chace, Paul G.
1964 An ethnographic approach to the archaeology of the Luiseno Indians. San Bernardino County Museum Publications 12.2.

Chamberlin, William H.
1945 From Lewisburg to California in 1849 (Notes from the diary of William H. Chamberlin). Edited by Lansing Bloom. New Mexico Historical Review 20 (1):14-57.

Chamberlin was one of the many Forty-Niners to travel through Warner's Pass.

Chang, K. C. (ed.)
1968 Settlement archaeology. National Press Books, Palo Alto, California.

This book discusses the study of settlement archaeology.

Chapman, Charles E.
1921 A History of California: The Spanish Period. MacMillan, New York.

This is a readable history, based on Bancroft.

Chase, J. Smeaton
1919 California desert trails. Houghton Miffin Company, New York and Boston.

Chase's description of San Ysidro and San Ignacio are relevant to San Diego County history.

Cheatham, N. H. and J. R. Haller
1975 Review draft of a forthcoming publication: *The NLWRS checklist of California habitat types*. University of California Natural Land and Water Reserve System, Berkeley.

Desert plant communities are discussed in this publication.

Childers, W. M.
1974 The Yuha man: an interim report. Paper read at the annual meeting of the Society of California Archaeology, Riverside.

This two page report contains preliminary information concerning the Yuha skeleton which was recovered.

Cleland, Robert Glass
1941 *The cattle on a thousand hills - southern California, 1850-1880*. Huntington Library, San Marino.

This is the best account of the cattle ranches of southern California.

Clewlow, C. W. Jr.
1978 Prehistoric rock art. In *Handbook of North American Indians, California*, Vol. 8, edited by Robert F. Heizer. Smithsonian Institution, Washington, D. C.

Briefly Clewlow traces the research done on rock art in California and then discusses style areas; Great Basin, central Sierra, north coast southwest coast, northeast, southwest, Santa Barbara and southern Sierra.

Conkling, Roscoe and Margaret
1948 *The Butterfield Overland Mail* Westerner's Brand Book, Los Angeles.

This is a standard account of the Butterfield Stage Line. It locates the Southern Emigrant Route and the stage stations. It also includes photographs and drawings of stations and stagecoach drivers.

Cook, Sherburne F.
1943a The conflict between the California Indian and White civilization. *Ibero-Americana* 21-24.

This is a comprehensive discussion of the physical impact of Western civilizaiton on Native Americans.

Cook, Sherburne F.
1943b Migration and urbanization of the Indians of California. *Human Biology* 15(1):33-45.

Basing his analysis on a census taken in 1928, Cook demonstrates that the Mission Indians tended not to migrate away from their traditional territories.

Cook, Sherburne F.

1972 The aboriginal population of upper California. In The California Indians, edited by R. F. Heizer and M. A. Whipple, pp. 66-72. University of California Press, Berkeley.

This is a revision of Cook's 1943 work in which he raises his aboriginal population estimates.

Cooke, Lt. Col. Phillip St. George

1849 Official journal Santa Fe to San Diego. Ms, SDHS Library, Serra Museum.

This is Lt. Cooke's own account of the journey of the Mormon Battalion.

Coolidge, Dana

1939 Old California cowboys. E. P. Dutton and Company, New York.

This layman's book describes the distinctive cowboys of California.

Copper, Charles F.

1975 Ecological resources. In Phase one regional studies Sundesert Nuclear Project transmission system environmental study. Prepared for San Diego Gas and Electric Company, Wirth Associates.

Provides detailed information concerning the ecological resources in San Diego County.

Corrales, Janine

1977 Kumeyaay fiberworks Ms., San Diego Museum of Man. Unpublished report Series #49.

Cottam, W. P., Tucker, J. M. and Drobnick, R.

1959 Some clues to Great Basin postpluvial climates provided by oak distribution: Ecology 40:361-377.

This work supports Antev's climatic sequence.

Couro, Ted

1975 San Diego County Indians as farmers and wage earners. Pamona Pioneer Historical Society, Pamona.

Couro, Ted and Christina Hutcheson

1973 Dictionary of Mesa Grande Dieguerno; 'Iipay Aa-English/English-'Iipay Aa. Malki Museum Press, Banning, California.

Couts, Cave J.

1932 From San Diego to the Colorado in 1849--the journal and maps of Lieutenant Cave J. Couts, edited by William McPherson. Arthur M. Ellis, Los Angeles.

Lt. Couts accompanied the International Boundary Commission Surveyor Whipple, describing settlements along the way. The journal is well annotated.

Coy, Owen C.
1919 *Guide to the county archives of California*. California State Printing Office, Sacramento.

Pages 398-408 refer to San Diego County Archives.

Crabtree, R. H., C. N. Warren and D. L. True
1963 Archaeological investigations at Batiquitos Lagoon, San Diego County, California. *Annual Report Archaeological Survey*. Department of Anthropology Society, University of California, Los Angeles.

This report describes excavation at Batiquitos Lagoon sites SDi603 and SDi211. It includes description of sites locations, stratigraphy, C-14 dates, stone features, burials, artifacts and appendices describing shell, midden and macro-column shell analysis.

Crespi, Juan
1927 *Fray Juan Crespi: Missionary Explorer on the Pacific Coast 1769-1774* edited and translated by Herbert Bolton. University of California Press, Berkeley. (Reprinted: AMS Press, New York, 1971.)

An account of Crespi's travels in southern California in 1795.

Crouch, Herbert
1915 Reminescences, 1868-1915. Ms., California Room (CR), San Diego Public Library; and SDHS Library (SDHS), Serra Museum.

This is a valuable first-hand account of life in San Diego County. Crouch describes sheep-herding, cattle ranching, notable floods and droughts, the struggles between ranchers and farmers.

Cuero, Delfina
1970 *The autobiography of Delfina Cuero: a Diegueno Indian as told to Florence Shipek*. Malki Museum Press. Morongo Indian Reservation.

This account spans the majority of years since the turn of the century and clearly outlines a change in Native American life style.

Cupples, Sue Ann
1975 An archaeological survey of the San Diego River. Ms., San Diego State University Foundation.

Cupples, Sue Ann and Ken Hedges
1976 San Luis Rey River Basin: overview of cultural resources. Ms., San Diego State University Foundation.

This is a detailed inventory of the San Luis Rey River Basin. Particular sites and general research orientations are discussed.

Curties, E. S.
1926 The North American Indian. The University Press, Cambridge, England.

Ethnographic information for Luiseno, Cahuilla, Diegueno, Mono, Paviotso is presented focusing on material culture and mythology. Some information on social organization is also presented. A short lexical comparison concludes the report.

Dakin, Susanna
1939 A Scotch paisano. University of California Press, Berkeley.

This biography of Hugo Reid is cited because Reid married a Gabrieleno woman.

Dana, Samuel T. and Myron Krueger
1958 California lands. The American Forestry Association, Washington, D. C.

This is a useful summary of land laws of California.

Dana, Richard
1947 Two years before the mast. The Limited Editions Club, New York.

This account of the Boston hide droghers made California known in the east.

Davidson, John
1934-
1943 San Diego place names. San Diego Tribune articles. SDHS Library, Serra Museum.

Davidson was the director of the Serra Museum when he wrote this informative series.

Davidson, John
1934-
1936 San Diego County Place names. 3 vols. Ms., California Room, San Deigo Public Library.

Davis, Abel
ca. 1955
The memoirs of Abel Davis. n. p.

Davis was an early settler of Valley Center. This is one of the few published sources on the history of this community.

Davis, E. H.
1919 The Diegueno ceremony of death images. Contributions from the Museum of the American Indian. Heye Foundation 5(2):7-33. New York.

This is a relatively lengthy description of the image ceremony. Much of the information contained within this article is applicable to all of the San Diego region.

Davis, E. H.

1921 Early cremation ceremonies of the Luiseno and Diegueno Indians in southern California. Museum of the American Indian, Heye Foundation. Indian Notes and Monographs 7: 87-110.

A comparative discussion of similarities and differences in Yuman and Shoshonean cremation practices, eyewitness accounts are included.

Davis, E. H.

1927 The Indians of southern California San Diego Business pp. 10, 11-38.

Davis, E. H.

1928 Modern pottery vessels from San Diego County, Museum of the American Indian Heye Foundation, Indian Notes and Monographs 5: 93-96.

Davis, E. H.

1967 Diegueno basketry and pottery. Pacific Coast Archaeological Society Quarterly 3(1): 59-66.

This description of utilitarian art within southern San Diego County discusses construction presence and lack of design elements, and variation in form.

Davis, E. L.

1966 The San Dieguito people: some ethnographic comparisons. In Ancient Hunters of the Far West, edited by R. F. Pourade, pp. 127-138. The Copley Press, San Diego.

Davis, E. L.

1969 Lifeways of the Diegueno Indian. Ms., San Diego Museum of Man.

This manuscript contains useful information for anyone interested in the Diegueno Indians. It is accompanied by a box of notes, photos and miscellanea which is invaluable.

Davis, E. L.

1976 Two dated La Jollan burials and their place in California prehistory, a review. Pacific Coast Archaeological Society Quarterly 12(4):1-44.

Davis describes the excavation of flexed inhumations from coastal sites within San Diego County. A major goal of the article is definition of the La Jolla complex. Figures of the site are included with a discussion of characteristics of La Jolla culture(s), season and use of site, and La Jollan cobble technology.

Davis, William M.

1889 Sixty years in California. A. J. Leary, San Francisco.

This is a comprehensive description of early California. Davis is associated with an early attempt to develop San Diego Bay.

Delaney, Jack
1970 "Amble up to Anza" Desert Magazine 33(3):36-37.

Dickerson, Roy D.
1962 Seventy five years of electrical service. Southern California Rancher 27(7-8): 33.

This short article describes the extension of electrical service into the inland county.

Dixon, Ben F.
1964 The saga of San Felipe. Ms., SDHS Library, Serra Museum.

This is a series of contemporary accounts of San Felipe. It contains an excellent bibliography of original sources.

Dobyns, Henry F.
1966 Estimating aboriginal American population: an appraisal of techniques with a new hemispheric estimate. Current Anthropology 7: 395-449.

Killea (1975) takes into account this revision of Native American populations.

Drucker, Philip
1937 Culture element distributions, V: southern California. University of California Anthropological Records 1 (1): 1-52. University of California, Berkeley.

This section is part of a lengthy series of trait lists. Drucker's lists are comparatively exhaustive. They provide an invaluable resource as documentation of material culture of the area.

Drucker, Philip
1941 Culture element distributions, XVII: Yuman-Piman. University of California Anthropological Records 6 (3): 91-230.

DuBois, C.
1901 The mythology of the Dieguenos. Journal of American Folk-Lore 14 (54: 181-185.

DuBois, C.
1903 Manzanita basketry; a revival. The Papoose 1 (7): 21-27. New York.

DuBois, C.
1904 The story of the Chaup: a myth of the Dieguenos. Journal of American Folk-Lore 17 (66): 185-188.

DuBois, C.
1905 The mythology of the Dieguenos, Mission Indians of San Diego County, California, as proving their status to be higher than is generally believed. Proceedings of the 13th International Congress of Americanists, pp. 101-106.

DuBois, C. G.
1906 Dieguено myths and their connections with the Mohave. Proceedings of the International Congress of Americanists 15 (2): 129-133. Paris.

DuBois, C. G.
1907 "Dieguено mortuary ollas." American Anthropologist. n. s. 9: 484-486.

DuBois, C. G.
1908 Ceremonies and traditions of the Dieguено Indians. Journal of American Folk-Lore 21 (81-82): 228-236.

DuBois, C. G.
1908a The religion of the Luiseno Indians. University of California Publications in American Archaeology and Ethnology 8: 69-186.

DuBois breaks her work into initiation ceremonies, mourning ceremonies, ceremonial songs, myths, and traditional knowledge. This is the most complete work on Luiseno ceremonies. Brief notes on material culture are also included.

Dumke, Glenn S.
1963 The boom of the eighties in southern California. Huntington Library, San Marino.

This is a good account of the railroad boom of the 1880s. It describes the speculation and the bust, and the urban explosion of coastal southern California. However, it does not describe the new settlers.

Dunn, H. H.
1930 "The prehistoric painter of Poway" Touring Topics. May:36-38, 56.

Eberhart, Harold H.
1970 Published archaeological sites and surveys in southern California. In Newsletter of the Archaeological Survey Association of Southern California 17: 4-21.

Edwards, E. I.
1961 Lost oases along the Carrizo. The Westerlorn Press, Los Angeles.

This is a well-written and -researched investigation of historic sites in the Carrizo corridor; it includes an excellent annotated bibliography.

Elliott, Wallace W.
1883 (1965 edition)
History of San Bernardino and San Diego Counties. Riverside Museum Press, Riverside.

This is one of the best early histories of San Diego County. It describes the inland valleys in detail, including farming, ranching and early settlers.

Ellis, Arthur J. and Charles Lee
1923 Geology of ground waters of the western part of San Diego County. U. S. G. S. Water Supply Paper. 446

This report discusses the water resources of western San Diego County. It includes technical descriptions of pumps.

Ellison, W. H. and Francis Price (eds.)
1953 The life and adventures in California of Dom Augustin Janssens, 1834-1856. Huntington Library, San Marino.

This biography includes an account of raids made on Rancho Jamul in 1837.

Ellsberg, Helen
1972 Mines of Julian. La Siesta Press, Glendale, California.

This is one of the more detailed accounts of the Julia-Banner mines.

Elsasser, Albert B.
1978a Development of regional prehistoric cultures. In Handbook of North American indians, Vol. 8, edited by R. F. Heizer, pp. 37-57. Smithsonian Institution, Washington, D. C.

Elsasser, Albert B.
1978b Basketry. In Handbook of North American Indians, California, Vol. 8. edited by Robert F. Heizer, pp. 626-641. Smithsonian Institution, Washington, D. C.

California basketry is discussed by Elsasser. He focuses on the history, techniques and materials, types and usages, ornamentation of baskets. Also included in this section is a large number of photographys of baskets and a table of the variety and distribution of baskets in California.

Emory, William
1848 Notes of a military reconnaissance from Fort Leavenworth, in Missouri, to San Diego, in California. Wendell and Van Benthuysen, Printers, Washington, D. C.

Emory was a member of Kearny's Army of the West. This account includes a description of what became of the Southern Emigrant Route, the Battle of San Pasqual, and detailed maps.

Engelhardt, Zephryn
1920 San Diego Mission. James M. Barry Company, San Francisco.

This is a standard history of Mission San Diego. Although its framework is dated it does include useful statistical summaries of marriages, deaths, baptisms and crop production.

Engelhardt, Zephyrin
1921 *San Luis Rey Mission*. James M. Barry Company, San Francisco.

This is a standard history of Mission San Luis Rey. Although its framework is dated, it does include useful statistical information of baptisms, marriages, deaths and crop production.

Environmental Development Agency
1973 Natural resource inventory of San Diego County. Part 2. Historic Site Inventory.

This is an inventory of historic sites in San Diego County. Although useful as a guide, it is not very detailed. The inventory map is on file at the Integrated Planning Office.

Escondido Times-Advocate (newspaper)
1912 (on microfilm, Escondido City Library).

Euler, R. C.
1959 Comparative comments on California pottery, appendix to archaeological resources of Borrego State Park by C. W. Meighan. *Archaeological Survey Annual Report*. 1958-1959 pp. 41-44. University of California, Los Angeles.

Although extremely brief, this appendix includes a broad comparison of Tizon brown ware in California and Arizona.

Evernham, Clark
1955 Museums of Archaeology and Anthropology. In Clearing house for Western Museums, Denver. *Newsletter* 180: 786-787.

Ezell, P. H.
1968 Report on Presidio Excavation, 1967. *Journal of San Diego History* 14(2): 28-30.

This is a brief progress report.

Ezell, P. H.
1970 A chapter from the logbook (an unusual burial from the San Diego Presidio). *Journal of San Diego History* 16(4).

Ezell, P. H. and N. D. Broadbent
1972 Archaeological investigations at the Casa de Jose Manuel Machado (the Stewart House), 2724 Congress Street, Old San Diego, California. *Pacific Coast Archaeological Society Quarterly* 8(4): 1-34.

This is an account of the excavations that were conducted.

Ezell, P. H., et al.
1968 A landscape of the past - the story of the Royal Presidio excavations. *Journal of San Diego History* 14(4): 5-32.

This is a history of the Presidio and of its excavation.

Farm Advisor Files
1915- Reports of the Farm Advisors. San Diego County Agricultural Extension Service.

Faye, P.
1928 Christmas fiestas of the Cupeno. *American Anthropologist* 30(4): 651-658.

Fernandez, Ferdinand F.
1968 Except a California Indian: A study in legal discrimination. *Historical Society of Southern California Quarterly* 20(1): 161-175.

Fernandez analyzes the legal descriptions placed on Native Americans in California.

Fink, Gary R.
n. d. RGM and GENREV: regional studies in San Diego County. Paper presented at the 1978 Society for California Archaeology meetings.

The paper describes the San Diego County Department of Transporttation archaeological report filing system.

Flannery, K. V.
1969 Origins and ecological effects of early domestication in Iran and the Near East. In *The Domestication and Exploitation of Plants and Animals*, edited by P. S. Ucko and G. W. Dimbleby, pp. 73-100. Aldine, Chicago.

Fletcher, Edward
1906 *An auto trip through San Diego's back country*. San Diego.

Foote, Kay
1890 Mission Indians. In *Report on Indians taxed and not taxed*. pp. 207-16. U. S. Department of the Interior, Census Office. Eleventh Census. Government Printing Office, Washington, D. C.

This report contains Native American population figures.

Fowler, Lloyd
1963 A history of the dams and water supply of western San Diego County. M. A. Thesis, University of California. (Copy at SDHS Library, Serra Museum.)

This is a detailed account of the construction of dams in San Diego County and of the water systems they served.

Frakes, G. E. and G. B. Solberg
1971 *Minorities in California history*. Random House, New York.

Frickstad, Walter
1955 *A century of California post offices 1848 to 1954*. Philatelic Research Society, Oakland.

This is a useful compilation.

Fritz, Ken, L. Knight and J. Gothold
1977 The Williams Ranch Sites, San Diego County, California. *Pacific Coast Archaeological Society Quarterly* 13(4): 1-52.

This report furnishes a listing of dominate flora, descriptions of sites located during survey, and discussion of a sample excavation. Site maps are provided, as are extensive descriptions and line illustrations of the stone artifacts.

Galvin, J.
1965 *A record of travels in Arizona and California 1775-1776. Fr. Francisco Garces*. A new translation, edited by J. Galvin. John Howell Books.

Garces, Father
1976 Map of Father Garces' travels. Santa Fe Savings and Loan Association.

Garcia, Mario
1972 A Chicano perspective on San Diego history. *Journal of San Diego History* 18(4): 14-21.

Garcia presents the Mexican American view of San Diego history, arguing for the necessity of new interpretations and further research.

Garcia, Mario
1977 Chicano history: an oral history approach. *Journal of San Diego History* 23(1): 46-53.

Garcia discusses the necessity for conducting interviews among Chicanos in order to record their history.

Gatschef, Albert S.
1879 Classification into seven Linguistic stocks of Western Indian dialects contained in forty vocabularies. In *Report upon the United States geographical surveys west of the One Hundredth Meridian in charge of Lieut. Geo. M. Wheeler*, Vol. 7, pp. 403-485. U. S. Government Printing Office, Washington, D.C.

Gifford, E. W.
1918 Clans and moieties in southern California. *University of California Publications in American Archaeology and Ethnology* 14(2): 155-219.

A major reference, Gifford's theoretical work on social organization is still the basis for much research in California. It should be noted that revisions have been suggested in various areas. Specific references are made to the Diegueno, Pima, Serrano, Cahuilla, Cupeno and Luiseno.

Gifford, E. W.
1922 California kinship terminologies. University of California Publications in American Archaeology and Ethnology 18: 56-60.

Gillingham, Robert C.
1961 The Rancho San Pedro. Dominguez Estate Company, Los Angeles.

Although it does not deal with a San Diego County rancho, this book is useful because of the detail with which it describes ranch life.

Glennan, William Stuart
1972 The hypothesis of an ancient Pre-Projectile Point Stage in American prehistory: its application and validity in Southern California. Ph.D. dissertation. University of California, Los Angeles.

Glennan discusses previous research on early man in the southwest.

Gordinier, Jerry G.
1966 Problems of settlement in the San Diego foothills. M. A. thesis, San Diego State College.

This is an excellent analysis of the problems confronted by the early settlers of the foothills of San Diego County, including the western portion of the Otay-Hauser Mountain Study Area. It includes historical as well as geophysical information.

Graham, E. E.
1973 Yuman warfare: an analysis of ecological factors from ethnohistorical sources. Paper presented at IXth International Congress of Anthropological and Ethnological Sciences.

Grant, Wallace
1903 The exiles of Cupa. Out West 19(1): 25-42.

Grant describes the Cupeno exiles' trip to Pala. His article is illustrated with photographs.

Gray, Andrew B.
1868 Report of A. B. Gray, upon the Atlantic and Pacific Railway. San Diego Union Weekly, October 24 to November 14.

Gray made a special reconnaissance of a railroad route to Southern California.

Green, E. F.
1933 The San Diego Old Mission irrigation system. Ms., SDHS Library, Serra Museum.

Green describes the development of Mission irrigation in San Diego.

Griffin, Ernst C.
1976 San Diego's population patterns. In San Diego: an introduction to the region, edited by Philip Pryde, pp. 61-72. Kendall/Hunt Publishing Company, Dubuque, Iowa.

This is a brief overview.

Griner, E. Lee and Phillip R. Pryde
1976 Climate, soils and vegetation. In San Diego: an introduction to the region, edited by Philip Pryde, pp. 29-46. Kendall/Hunt Publishing Company, Dubuque, Iowa.

Guinn, James M.
1907 A history of California and an extended history of its southern coast counties. 2 Vols. Historic Record Company, Los Angeles.

The biographical information included in this history makes it useful for San Diego County history.

Guinn, James M.
1910-10 The Sonoran migration. Southern California Quarterly 8:31-36. The early Sonoran migration through Warner's Pass is described.

Gunn, Douglas
1887 Picturesque San Diego. Knight and Leonard, Chicago.

One of the many promotional books on Southern California. This one does contain useful historical information on the inland County and a good collection of photographs.

H. H.
1883 Outdoor industries in southern California. Century Magazine 26(6): 803-820.

In this article orchards and irrigation techniques are described, including irrigation using underground pipes.

Hall, H. M. and J. Grinnell
1919 Life zone indicators in California. Proceedings of the California Academy of Sciences, Serial 4. 9(2): 37-67.

This is an early work describing the physical environment of California. It presents good definitive explanation of features that can be grouped into life zones.

Harding, M.
1951 La Jollan culture. El Museo 1: 10-11, 31-38.

Hare, P. E.
1974 Amino acid dating - a history and an evaluation. MASCA Newsletter 10(1): 4-7.

The article discusses valid and invalid applications of the amino acid dating technique and describes some of the inherent problems of the method.

Harmon, Warren W.
1964 The grape industry in San Diego County, California. M. A. thesis, San Diego State College.

Harmon analyzes the development of the grape industry. He demonstrates the importance of raisins and discusses the transformation of vineyards to residential communities.

Harrington, John P.
1947 Chuckwalla, a Cahuilla Indian Word. El palacio 54: 119-120.

Harrington, J. P.
1924 Archeological work in California. In the Smithsonian Institution Explorations and field work in 1923. (Smithsonian Miscellaneous Collections 76 (10): 107109. Washington D. C.

Harrington, J. P.
1927 Archaeological and ethnological researches in California. In the Smithsonian Institution Explorations and field work in 1926. (Smithsonian Miscellaneous Collections 78 (7): 232-237. Washington, D. C.

Harrington, J. P.
1927 Researches on the archaeology of southern California. Smithsonian Miscellaneous Collections. 78 (1): 106-111.

Harrington, M. R.
1955 Ancient life among the Southern California Indians. Parts I, II, III. Masterkey 29: 79-88, 117-129, 153-167.

Harrington, M. R.
1958 Digging up the past at San Luis Rey. Masterkey 32: 55-57.

This is a brief report on the excavation of the Mission laundry.

Harvey, Herbert R.
1967 Population of the Cahuilla Indians: decline and its causes. In Eugenics Quarterly 14: 185-98.

Hawgood, John
1958 The pattern of Yankee infiltration in Mexican Alta California, 1821-1846. Pacific Historical Reviews. 27(1): 27-37.

In this article Hawgood differentiates between the early maritime infiltration of Anglo American ship captains and merchants who tended to marry into the elite California families; and the fur trappers who settled the interior of California.

Hayes, Benjamin I.
1929 Pioneer notes from the diaries of Judge Benjamin Hayes, 1849-1875. Edited by Marjorie Wolcott. Privately printed, Los Angeles.

This edited, abridged journal contains invaluable first-hand descriptions of San Diego County. Hayes' copious notebooks and scrapbooks are at the Bancroft Library.

Hayes, Benjamin I.
1934 Notes on the Indians of San Diego County; from the MMs of Judge B. Hayes, edited by Arthur Woodward. Masterkey 8:140-50.

A brief but interesting discussion of some county rancherias, including location and identifiable characteristics. A few prominent Indians are also mentioned and described.

Haynes, C. Vance, Jr.
1968 Geochronology of the late Quaternary alluvium. In Means of correlation of Quaternary successions, edited by Roger B. Morrison and Herbert E. Wright, Jr. pp. 591-631. University of Utah Press, Salt Lake City.

Hedges, Kenneth E.
1966 The bedrock metate. Ms., San Diego Museum of Man.

Hedges, Kenneth E.
1966a Population estimates for Diegueno sites. Ms., San Diego Museum of Man.

Hedges, Kenneth E.
1966b Santa Ysabel ethnobotany. Ms. Prepared for Anthropology 199. San Diego State University.

This report compiles ethnobotanical notes from Indian informants and previous ethnobotanical studies. Sketches of major plant resources are included.

Hedges, Kenneth E.
1969 From the river to the sea: Diegueno and Mojave Indians of Southern California. A guide to the Exhibit. Ms. San Diego Museum of Man.

Hedges, Kenneth E.
1970 An analysis of Diegueno pictographs. M. A. Thesis, San Diego State University.

An outstandingly thorough work on Diegueno rock art. A comparison of the Diegueno style with others in the area is included.

Hedges, Kenneth E.
1971 Statement to the San Diego County Board of Supervisors regarding proposed road construction in Coyote Canyon. Ms., San Diego Museum of Man.

Hedges, Kenneth
1973 A Rabbitskin Blanket from San Diego County. San Diego Museum of man Ethnic technical notes, No. 10.

Hedges, Kenneth E.
1975 Notes on the Kumeyaay: a problem of identification. *Journal of California Anthropology* 2(1): 71-83.

Hedges clarifies distinctions among the various "Diegueno" groups in the San Diego County area.

Heiges, Harvey
1976 The economic base of San Diego County. In *San Diego: an introduction to the region*, edited by Phillip Pryde, pp. 137-148. Kendall/Hunt Publisning Company, Dubuque, Iowa.

This is a useful overview.

Heilbron, Carl H. (ed.)
1936 *History of San Diego County*. San Diego Press Club, San Diego.

This is one of the more useful county histories. Numerous inland county topics are discussed by knowledgeable writers.

Heizer, Robert F.
1964 The western coast of North America. In *Prehistoric man in the New World*, edited by J. D. Jennings and E. Norbeck, pp. 117-148. University of Chicago Press, Chicago.

This reference reviews and discussions of the evidence of prehistoric man's existence on the west coast of North America.

Heizer, Robert F.
1969 *Catalogue of the C. Hart Merriam collection of data concerning California tribes and other American Indians*. University of California Archaeological Research Facility, Department of Anthropology. Berkeley.

Heizer, Robert F.
1974 "An early Cahuilla ethnographic sketch." *Masterkey* 48 (1): 14-21.

Heizer, Robert F. (ed.)
1975 *California Indian History*. Publications in Archaeology, Ethnology and History, 4. Ballena Press, Ramona.

This is an excellent bibliography of works on Native American history.

Heizer, Robert F. (ed.)
1976 Some last century accounts of the Indians of southern California. Ballena Press, Ramona.

In this collection, Heizer published first-hand accounts of Native Americans, particularly by Indian agents.

Heizer, Robert F. (ed.)
1978 Handbook of North American Indians, California. Vol. 8. Smithsonian Institution, Washington, D. C.

This volume is the most recent and comprehensive publication to describe the Native American groups represented in the BLM study areas.

Heizer, Robert F.
1978a History of research. In Handbook of North American Indians, California, Vol. 8, edited by Robert F. Heizer, Smithsonian Institution, Washington, D. C.

Heizer summarizes the history of anthropological research in California. Sources are provided in this narrative which features specific researchers; document descriptions are included.

Heizer, Robert F. and Albert B. Elsasser
1970 A bibliography of California archaeology. Contributions of the University of California Archaeological Research Facility: 6. University of California Archaeological Research Facility, Department of Anthropology. Berkeley.

Heizer, Robert F. and A. Treganza
1944 Mines and quarries of the Indians of California. California Journal of Mines and Geology 40: 291-358.

This is a valuable reference, a concise listing of mines within California. Some interesting ethnographic information is included. Maps with mine type and location are provided.

Heizer, Robert F. and M. A. Whipple (eds.)
1971 The California Indians: a source book, University of California Press. Berkeley.

Henshaw, Henry W.
1887 Perforated stones from California. Smithsonian Institution, Bureau of Ethnology, Government Printing Office, Washington, D. C.

Henshaw, Henry W.
1972 The Luiseno Creation Myth, edited by Robert F. Heizer. In Masterkey 46(3): 93-100.

Herltein, Leo George and U. S. Grant, IV
1944 The Geology and Paleontology of the marine Pliocene of San Diego, California, Part I, Geology. Memoirs, San Diego Society of Natural History. Vol. II. San Diego.

Hertlein, Leo George and U. S. Grant, IV
1954 Geology of the Oceanside-San Diego coastal area, Southern California. In Geology of Southern California, edited by Richard H. Jahns, pp. 53-64. Division of Mines Bulletin 170, San Francisco.

Heye, G. G.
1919 Certain aboriginal pottery from Southern California. Museum of the American Indian Notes and Monographs. 7(1): 7-46. Heye Foundation, New York.

Heye, G. G.
1927 Shamans cache from Southern California. Museum of the American Indian, Heye Foundation, Indian Notes and Monographs 4: 315-323.

Hill, J. H.
1969 Volitional and non-volitional verbs in Cupeno. In Papers from the 5th Regional Meeting of the Chicago Linguistic Society, edited by R. I. Binnick, et al., pp. 348-356.

Hill, J. H.
1970 A peeking rule in Cupeno. Linguistic Inquiry 1: 534-539.

Hill, J. H.
1972 Cupeno lexicalization and language history. International Journal of American Linguistics 38(3): 161-172.

Hill, J. H. and R. Nolasguez
1973 Mulu'wetam: the first people; Cupeno oral history and language. Malki Museum Press, Banning, California.

A definitive collection of legends and myths, this volume contains information relevant to the understanding of Cupeno world view.

Hill, Joseph
1927 History of Warner's Ranch and its environs. Privately printed, Los Angeles.

This is a complete history of Warner's Ranch, from the Native American period to early in the twentieth century. It includes a translation of the Juan Mariner diary of 1795.

Hilton, John W.
1949 Black Magic of the Cahuilla. Desert magazine 12(4): 10-13.

Hinton, L.
1975 Notes on La Huerta Diegueno ethnobotany. Journal of California Anthropology 2(2): 214-222.

Hohenthal, W.
1950 Southern Diegueno use and knowledge of lithic materials In Kroeber Anthropological Society Papers. No. 2, pp. 9-16. Berkeley.

Holmes, W. H.
1902 Anthropological Studies in California. Report of the United States National Museum, 1900, pp. 155-187. Washington D.C.

Holmes, T. C. and R. L. Pendleton
1918 Reconnaissance soil survey of the San Diego Region, California. U. S. Department of Agriculture, Bureau of Chemistry and Soils. Government Printing Office, Washington, D. C.

This publication contains pertinent soil type information for the study areas.

Hooper, L.
1920 The Cahuilla Indians. University of California Publications in American Archaeology and Ethnology 16: 315-380.

An early ethnography, this work is important as a reference, particularly for the Desert Cahuilla. Hooper includes excellent descriptions of architectural structures.

Hoppin, R. A. and L. A. Norman, Jr.
1950 Commercial "black granite" of San Diego County. California Division of Mines Special Report 3.

This is a good description of the quarrying of this distinctive granite.

Howard, E. H.
1898 California Indians prior to 1850. American Anthropologist 2: 197-200.

Hubbs, C. and G. Bien
1967 La Jolla natural radiocarbon measurements V, Radiocarbon. 9.

List of C^{14} dates.

Hubbs, C., G. Bien, and H. Suess
1960 La Jolla natural carbon measurements I. American Journal of Science Radiocarbon Supplement 2: 197-223.

This publication lists and briefly describes the sites from which specimens were collected and dated by the radiocarbon technique.

Hubbs, C., G. Bien, and H. Suess
1962 La Jolla natural radiocarbon measurements II. Radiocarbon. 4: 204-238.

The 1962 C^{14} dates that the La Jollan Lab processed are listed in this publication. A brief description is included of the site where the dated material was found.

Hubbs, C., G. Bien, and H. Suess
1963 La Jolla natural radiocarbon measurements III. American Journal of Science 5: 254-72.

This is the 1963 publication of the La Jollan processed C^{14} dates.

Hubbs, C., G. Bien, and H. Suess
1965 La Jolla natural radiocarbon measurement IV. *Radiocarbon* 7: 66-117.

C^{14} date list.

Hudson, R. F. (ed.)
1971 *Desert hours with Chief Patencio as told to Kate Collins by Chief Francisco Patencio*. Palm Springs Desert Museum, Palm Springs.

Compilation of myths and legends of a Cahuilla Indian.

Hudson, Tom
1964 *Three paths along a river: the heritage of the valley of the San Luis Rey*. Desert Southwest Publishers. Palm Desert, California.

This is a popular and useful account.

Hudson, Tom
1969 The Burning of the garments, a Luiseno mourning rite. *Westways Magazine*, pp. 36-38.

Huesser, Calvin J.
1966 Pleistocene climatic variations in the western United States. In *Pleistocene and Post-Pleistocene climatic variations in the Pacific area: a symposium*, edited by D. Blumenstock, pp. 9-56. Bishop Museum press.

Hunt, Charles B.
1953 Pleistocene -- recent boundary in the Rocky Mountain Region. *U. S. Geological Survey Bulletin* 996-A, Washington, D. C.

Hunzicker, Lena B.
n. d. Notebooks of San Diego County place names. Ms. California Room, San Diego Public Library.

Indian Commissioners Board
1869-
1909 *Annual reports*. (Included in the Secretaryof the Interior Annual Reports, and separately). Government Printing Office, Washington, D. C.

These reports include valuable information on Native American population, reservation life, agriculture and relations with Anglo Americans.

Iovin, J.
1963 A summary description of Luiseno material culture. *Archaeological Survey Annual Report*. 82-130. University of California, Los Angeles.

This is a concise reporting of artifact types followed by a quote or brief summary of the artifact, name and date of reference. It provides a useful overview, and is a good reference in which to find primary reference descriptions of the Luiseno material culture.

Jackson, Helen Hunt
1883 Report on the condition and needs of the Mission Indians. Facsimile edition, San Jacinto Museum, San Jacinto, California.

This is the report that the author of Ramona made to Congress.

Jahns, R. H. and L. A. Wright

1951 Gem and lithium bearing pegmatites of the Pala District. California Division of Mines, Special Report 7A. Sacramento.

This is a technical description of the Pala District.

James, George W.
1902 A Saboba origin-myth. Journal of American Folk-Lore 15 (56): 36-39.

James, George W. 1916Picturesque Pala. Radiant Life Press. Pasadena.

This is a good historical account.

James, H. C.
1960 The Cahuilla Indians. Westernlore Press, Los Angeles.

Jasper, James
ca. 1930
Trail-breakers and history makers of Julian; Ballena, Mesa Grande, Oak Grove, Warner Ranch, Banner, Cuyamaca. Ms, SDHS Library, Serra Museum.

This work is a valuable compilation of biographies of the early settlers of inland county communities.

Jennings, J. D.
1957 Danger Cave. University of Utah Anthropological Papers 27: 328.

Jennings, J. D.
1964 The desert west. In Prehistoric Man in the New World, edited by J. D. Jennings and Edward Norbeck, pp. 149174. University of Chicago press, Chicago.

The radiocarbon dates from Danger Cave, an important archaeologic site that exhibits an occupation record of long duration in the Lake Bonneville basin, do not correspond with Antevs scheme for the post glacial climatic sequence.

Johns, Sally C.
1973 The Battle of San Pasqual. M. A. thesis, San Diego University.

This is a recent work on the Battle of San Pasqual.

Johnson, Meslissa J.
1976 An archaeological inventory and assessment of corridor segments, 46 and 49, preferred southern route, San Diego County, Ms, San Diego State Foundation.

The report describes each site located during the surveys and addresses expected impacts in links 46 and 49 fpr the proposed Sundesert transmission line system.

Johnston, F.
1965 The Serrano Indians of Southern California. Malki Museum Press, Banning.

Joughlin, Roberta
1953 Cupeno Genesis. El Museo. n. s. 1(4): 16-23.

Journal of San Diego History
1955- (Formerly San Diego Historical Society Quarterly, 1955-1964; Times Gone by - The Journal of San Diego History, 1965).

This journal contains numerous articles on inland County history, some of which are listed separately.

Julain Historical Society
1969 History of Julian, edited by Myrtle Botts. Julian Historical Society, Julian, California.

This is a useful history of Julian, emphasizing family histories.

Kaldenberg, R. L.
1974 Archaeological impact report on the Singing HillsTennis Club and Motel Expansion. Ms.

Kaldenberg, R. L.
1975 An archaeological report of the preservation of SDM-W-562, Dehesa, California. Ms., Recon, Inc., San Diego.

Killea, Lucy
1975 Colonial foundations of land use and society in San Diego, 1769-1846. Ph. D. dissertation, University of California, San Diego.

This is the best overall analysis of the Spanish and Mexican periods in San Diego County.

King, Thomas, J. Jr.
1974 Description and analysis of some 1170 Martinez Canyon sherds. Ms, San Diego Museum of Man.

King, Tom
1972 Nations of Hunters?: New views of California Indian Societies, The Indian - Historian 5: 12-17.

Kirkpatrick, James D.
ca. 1957
Poway, California, a historical scrapbook. Ms., SDHS Library, Serra Museum.

This is a collection of articles on Poway.

Koloseike, Alan and M. Peterson
1963 Macro-column shell analysis. Appendix II, In archaeological investigations at Batiquitos Lagoon, San Diego County, California, by R. H. Crabtree, C. N. Warren, and D. L. True Archaeological Survey Annual Report. University of California, Los Angeles.

Krieger, Alex D.
1958 Review of "Pleistocene man in San Diego". American Anthropologist 60: 974-978.

Discussion of the validity of "artifacts" found at the Texas Street site excavated by G. F. Carter.

Krieger, Alex D.
1964 Early man in the New World. In Prehistoric man in the New World, edited by J. D. Jennings and E. Norbeck, pp. 23-81. University of Chicago press, Chicago.

Discussion of evidence of prehistoric man in the New World in terms of Pre-Projectile Point, Paleo-Indian, and Protoarchaic stages.

Kroeber, A. L.
1905 Supposed Shoshoneans in lower California American Anthropologist. n.s. 7:590-572.

Kroeber, A. L.
1908a A mission record of the California Indians. University of California Publications in American Archaeology and Ethnology 8(1): 1-27.

Kroeber, A. L.
1908b Ethnography of the Cahuilla Indians. University of California Publications in American Archaeology and Ethnology 8 (2):29-68

This is an early work by Kroeber that describes the Cahuilla.

Kroeber, A. L.
1908c Notes on the Luiseno. University of California Publication in American Archaeology and Ethnology 8:174-186.

Kroeber, A. L.
1922 Elements of culture in native California. University of California Publications in American Archaeology and Ethnology 13:260-328.

Kroeber, A. L.

1924 Basket designs of the Mission Indians. American Museum of Natural History Anthropological Papers 20(2):149-183.

Kroeber, A. L.

1925 Handbook of the Indians of California Bureau of American Ethnology, Bulletin 78.

This work may be considered "definitive" for its date of publication. Although some of the information has been updated, revised or is found elsewhere, nowhere else is there such a complete noting of cultural groups within California coupled with a discussion of material culture.

Kowta, Makoto

1969 The Sayles complex a late milling stone assemblage from Cajon Pass and the ecological implication of its scraper planes. University of California Publications in Anthropology 6.

Discusses the implications of agave exploitation tool kits found in pre-Altithermal assemblages in interior Southern California

La Force, Beatrice

1971 Alpine, Southern California: history of a mountain settlement. The Sunlight Press, El Cajon, California.

Although Alpine is not located in the BLM Study Areas, this is a useful local history.

Lamb, H. H.

1965 The early medieval warm Epoch and its Sequel. Paleogeopraphy, Paleoclimatology, Paleoecology 1:13-37.

Landis, Stephen

1976 A Cupeno House. MS, Series 48, San Diego Museum of Man. p. 26.

This report details the description of a dwelling structure by Cupeno informants and the subsequent building of it. Pictures supplement the text.

Lanning, E. P.

1963 Archaeology of the Rose Spring site, Iny-372: Berkeley, University: California Publications in American Archaeology and Ethnology 49:237-336.

Provides a cultural chronology of the post pleistocene period. The cultural sequence deals mainly with central California and Mojave Desert.

Lawbaugh, A.

1949 "They left their story in the desert sands." Desert Magazine 12(11):26-29.

Lawton, H. W. and L. J. Bean
1972 A preliminary reconstruction of aboriginal agricultural technology among the Cahuilla. In Temalpakh: Cahuilla Indian knowledge and usage of plants edited by L. J. Bean and K. S. Saubel pp. 197-206 Ballena Press, Ramona.

This work includes a discussion of historical references to aboriginal, agriculture and burning and hypotheses concerning the origin of agriculture amongst Southern California Indians.

Leader, Herman (ed.)
1929 A voyage from the Columbia to California in 1840 - from the journal of Sir James Douglas. California Historical Society Quarterly 8(2):97-115.

This article contains estimates of hide and tallow exports.

League of Women Voters of San Diego
1974 American Indians of San Diego County. San Diego.

This is a useful summary of Native American history.

Lee, M. H.
1928 The ancient house of the San Diegueno Indian Art and Archaeology 25:100-105, 108.

Lee, M. G.
1931 The Indians and I. Thomas Gwens Dawson, San Diego.

Lee, M. H.
1936 La-Wak and Tuck-she of the brush. Reilly and Lee, Co., Chicago.

Lee, M. G.
1937 Indians of the oaks. Athenaeum Press, Ginn & Co., Boston.

The first section of this book was also published as The Indians and I in 1931. It describes the adventures of a young caucasian boy adopted by Diegueno Indians. A variety of information is contained pertaining to exploitation of floral and fauna resources and Indian relationships. The second section is concerned with the life of an herb woman and her child. The position of this secular curer and her lifestyle is outlined throughout the book.

Leopold, Luna B
1951 Pleistocene climates of New Mexico. American Journal of Science 249:152-168.

Lesley, Lewis B.
1930 The International Boundary survey from San Diego to the Gila, 1849-1850. California Historical Society Quarterly 9(1):3-15.

This is a good overview of the survey.

Lewis, C. F.
1903 The Warner Ranch Indians and why they were moved to Pala. Overland Monthly 42:171-173.

Lewis, Frank D.
1903 The Warner Ranch Indians. Overland Monthly 42.

Libby, Willard F.
1951 Radiocarbon dates II, Science 114 (2960):291-296.
1961 Radiocarbon dating. Science 133 (3453):621-629.

These publications contain radiocarbon dates.

Linck, T. W.
1977 La Jolla natural radiocarbon measurements VII, Radiocarbon. 19(1):19-48.

A publication of C^{14} dated specimens processed by the La Jolla laboratory.

Lindsay, D. E.
1973 Our historic desert - the story of Anza-Borrego Desert. Union-Tribune Publishing Company, San Diego.

This is an excellent history of the Park and surrounding areas.

Long, Paul V., Jr. and Ronald V. May
1970 An archaeological survey of Rancho de San Felipe. Pacific Coast Archaeological Society Quarterly 6(4):1-60.

The report discusses the results of the 1969 archaeological survey of a portion of San Felipe Valley.

Lugo, Jose del Carmen
1877 Vida de un ranchero (Life of a rancher), edited by Thomas Savage. Ms. Bancroft Library.

This is a valuable account of Californio ranch life.

Lummis, Charles F.
1902a The Sequoya League. Out West 16(4):407-10.

Lummis, Charles F.
1902b The Exiles of Cupa. Out West 16(5):465-479, 602-612.

This is a report on the evicted Cupenos. Lummis, as a founder of the Sequoya League, was instrumental in selecting a good piece of land for the evicted Cupenos. This article describes the Cupenos at the time of the eviction.

Lummis, Charles F.
1902c Preliminary report of Warner's ranch Indian commission. Ms., Pioneer Room, San Diego County Law Library.

This is a report on various lands that could serve as a new home for the Cupenos evicted from the Warner Springs area.

Lummis, Charles F.
1902d Two days at Mesa Los Angeles, Out West 16(6):602-613.

Lummis, Charles F.
1903 The last eviction. Out West 19(5):485-491.

This article deals with the eviction of the Native Americans living at San Felipe.

Luomala, Katharine
1976 Flexibility in sib affiliation among the Diegueno. In Native Californians: a theoretical retrospective, edited by L. J. Bean and T. Blackburn, pp. 245-271. Ballena Press, Ramona.

Luomala presents a general discussion of social organization in San Diego County and follows it with information on the Diegueno cimul (the kin unit) and rancheria (residence unit). Variation and exceptions are described in some depth.

Luomala, Katharine
1978 Tipai-Ipai. In Handbook of North American Indians, California. Vol 8, edited by Robert F. Heizer. Smithsonian Institution, Washington, D.C.

This work provides a comprehensive overview of the culture of the Tipai and Ipai (Diegueno).

Lutz, Carl L.
1964 The San Diego County citrus industry. M.A. thesis, San Diego State College.

Lutz ably describes the development of the citrus industry in western San Diego County.

Lynch, H. B.
1931 Rainfall and stream run-off in Southern California. Metropolitan Water District of Southern California, Los Angeles.

Lynch has analyzed historical documents and weathe records to establish the periods of rainfall and drought in the various areas of Southern California, including San Diego.

Lyon, Nathaniel
1851 New route to the Gila and Colorado River. *San Diego Herald*. June 12, 3:1.

In this article Lyon describes his newly found route from San Diego to Fort Yuma.

Malicot, Andre
1963 Luiseno, a structural analysis I: phonology. *International Journal of American Linguistics* 29(2):89-95.

Martin, P. S.
1963 Early man in Arizona; the pollen evidence. *American Antiquity* 29:67-73.

Martin concludes that relatively sparse pine pollen, recovered from beds correlated with the Sulphur Springs Stage of theCochise culture in southern Arizona dated by radiocarbon about 8,000 years old, does not indicate pluvial conditions as Antevs (1962) supposed.

Martin, Paul. S. and P. J. Mehringer, Jr.
1965 Pleistocene pollen analysis and biogeography of the Southwest. In *The Quaternary of the United States*, edited by H. E. Wright, Jr. and David G. Frey, pp. 433-451. Princeton University Press, New Jersey.

Utilizing the information which fossil pollen and spores provide, the authors discuss the Altithermal drought and other climatic features.

Martin, P. S., James Schoenwetter, and B. C. Arms
1961 *Southwestern palynology and prehistory: the last 10,000 years.* Geochrongology Laboratories, University of Arizona, Tucson.

An excellent collection of graphic illustrations of climatic sequences based on pollen columns, and information concerning methodology, correlation, and distribution flora in the paleoenvironment.

May, R. V.
1975 Stone forts and dance circles in Kumeyaay territory in San Diego County. *Archaeological Fellowship of San Diego State University Occasional Paper* number 1.

An analysis of rock alignments within the southern part of the country led May to identify them as fortresses on the basis of their elevated locations.

May, R. V.
1976a Hwi-Nip-Shish: a settlement and land use pattern model for the Table Mountain Complex near Jacumba, California. Ms.

The report outlines the precedures employed in the Table Mountain archaeological surveys and the results of the survey.

May, Ronald V.
1976b A radiocarbon dated transition between a non-ceramic Amargosa component and a ceramic Hakataya component at Cottonwood Creek, San Diego County, California.

May, Ronald V. and H. M. Shields
1969 Prehistoric rock fortresses: chicken circles in San Diego County. Paper presented at the 1969 meeting of the Pelos Conference.

This paper is one of the few analytical treatments of stone alignments within the county.

McCain, Ella
1955 Memoirs of the early settlements - Dulzura, Potrero, and Cauyzo. Ms., SDHS Library, Serra Museum.

This is the best work available on the history of southern San Diego communities.

McCorkle, C. O. and Philip S. Parsons
1974 A statistical picture of California's agriculture. California Agricultural Experiment Station. *Circular* 459. (revised).

This is a summary of California agriculture.

McCown, B. E.
1945 An archaeological survey of San Vicente Lake Bed, San Diego County, California. *American Antiquity* 10:255-264.

McCown, B. E.
1955 Temeku. *Archaeological Survey Association of Southern California Paper* 3.

A discussion of the excavation of a Late Prehistoric Indian village.

McGrew, Clarence A.
1922 *City of San Diego and San Diego County*. American Historical Society, Chicago and New York.

This is a moderately useful county history.

Mckinney, Aileen
1972 Two Mortuary Urns from San Diego County. *Pacific Coast Archaeological Society Quarterly* 8(3):33-46

Mckinney's article reviews the results of excavation of mortuary sites within Diegueno territory.

McWilliams, Carey
1968 *North From Mexico*. Glenwood Press Publisher, New York.

This is one of the best accounts of the migration of Mexicans to the Southwest.

McWilliams, Carey
1973 Southern California - an island on the land. Peregoine Smith, Santa Barbara.

Although not a scholarly work, this book captures the distinctive character of Southern California.

Mehringer, Peter J., Jr.
1967 The environment of extinction of the late Pleistocene megafauna in the arid southwestern United States. In Pleistocene extinctions the search for a cause, edited by P. S. Martin and H. E. Wright, Jr. pp 247-266. Yale University Press, New Haven.

Mehringer, Peter J., Jr.
in press
Great Basin Late Quaternary environments and chronology. Handbook of North American Indians, Volume 11, Great Basin.

This report discusses the ecological and climatic sequence in regards to geological and biological evidence. The instability of the last 10,000 years has been no more dramatic than the ecological variation encountered by Great Basin inhabitants within a single year.

Meighen, C. W.
1954 A late complex in Southern California prehistory. Southwestern Journal of Anthropology 10(2):215-227.

A report of SDi 132 which resulted in the definition of the San Luis Rey I and II complexes.

Meighan, C. W.
1959 Archaeological resources of Borrego Desert State Park. Archaeological Annual Survey Report. 1958-1959. pp. 27-40.

This is a report of a survey of portions of the Anza-Borrego Desert State Park north of Highway 78. A brief discussion of possible impacts,and regional summaries are given.

Meighan, C. W.
1965 Pacific coast archaeology In Quarternary of the United States, edited by H. E. Wright and D. Frey, pp. 709-720. Princeton University Press. New Jersey.

Overview of the archaeological work undertaken in the western Pacific coastal states. Reviews radiocarbon dates, artifact assembleges and proposed subsistence patterns. Suggestions are made for further investigation.

Meighan, C. W.
1975 Cultural resources - archaeology. *Phase One Regional Studies: Sundesert Nuclear Project Transmission System Environmental Study*. Wirth Associates.

The report provides a general overview of the archaeology of San Diego and Imperial counties and portions of Riverside County and discusses the likelihood of locating archaeological remains in various portions of these counties.

Meighan, C. W. et al.
1976 Cultural resources - archaeology *Phase Two Corrdor Studies: Sundesert Nuclear Project Transmission System Environmental Study*. Wirth Associates.

Based upon environmental factors and site data, probability levels were established for the approximately 2000-mile long Phase II Sundesert transmission line system. The results are included in this report. Expected impacts are also discussed.

Meinig, D. W.
1971 *Southwest: three peoples in geographical change*. Oxford University Press, New York.

The history of the Southwest is presented from a geographer's point of view.

Meinzer, O. E.
1922 Map of the Pleistocene lakes of the Basin and Range Province and its significance. *Geological Society of America Bulletin* 33(3):541-552.

Important to the study area are the maps of the Salton Sea and the discussion that follows.

Meixner, Donald
ca. 1952
The historical development of water utilization. Ms., SDMS Library, Serra Museum.

This article contains a chronology of the development of water resources in the San Diego area.

Menzel, Spencer
1943 Paper railroads of the 90's. Ms., SDHS Library, Serra Museum.

This is an excellent history of the railroads that were not constructed in San Diego.

Merriam, C. Hart
1968 Village Names in twelve California mission records. Reports of the University of California Archaeological Survey 24.

This article mades reference to villages near Jamacha.

Meyer, Ruth S. (ed.)
1975 Historic buildings of the Ramona area. Ramona Pioneer Historical Society, Ramon.

This book describes 20 historic buildings (dating from 1859 to 1921) in the area surrounding Ramona. Besides providing architectural details of the houses, the book includes valuable information on pioneer settlers, roads, etc., as well as a useful bibliography of local historical sources.

Miller, F. H. Jr.
1962 Astro II: A pre-Spanish Diegueno site in Poway, California San Diego Science Foundation Occasional Paper No. 1, San Diego.

Minor, Rich
1975 Stone enclosure sites in San Diego County Pacific Coast Archaeological Society Quarterly 11(4):27-44.

Information concerning stone enclosures within the county is presented followed by data gathered through excavation of a structure in Kitchen Creek, San Diego County. A artifact inventory and photographs are included. Minor tentatively concludes that the structure was a dwelling.

Minor, R.
1976 A Kumeyaay subsidiary camp. Pacific Coast Archaeological Society Quarterly 12(4)72-78.

de Mofras, Duflot
1937 (1844)
Travels on the Pacific coast. Translated, edited and annotated by Marguerite Eyer Wilbur. Fine Arts Press, Santa Ana, Californai.

This account by a French diplomatic attache depicts California as it was in 1841.

Moore, Bertram B.
1956 Roads and trails in use in San Diego County between the years 1769 and 1885. Ms., SDHS Library, Serra Museum.

This is a valuable synopsis of early roads in the County, written by an expert.

Moriarty, J. R., III
1962 A tanged side scraper from San Diego County. Masterkey 36:149-152.

Moriarty, J. R., III
1965 Cosmogonv, rituals, and medical practices among the Diegueno Indians of Southern California Anthropological Journal of Canada 3(3):2-16.

Moriarty, J. R., III
1966 Cultural phase divisions suggested by typological change coordinated with stratigraphically controlled radiocarbon dating at San Diego. Anthropological Journal of Canada 4(4):20-30.

Discussion of pre San Dieguito, San Dieguito, La Jolla I, II and III, Diegueno I (Yuman) and Diegueno II (Protohistoric and historic).

Moriarty, J. R., III
1966a Evidence of mat weaving from an early La Jollan site. Masterkey 40:44-53.

Moriarty, J. R., III
1967 Transitional pre-desert phase in San Diego County. Science 155 (3762):533-555.

Moriarty, J. R. III
1968 The environmental variations of the Yuman culture area of Southern California. Anthropological Journal of Canada 6(2):2-19, 6(3):9-23.

This is a useful discussion of the cultural ecology of the Native Americans of Southern California.

Moriarty, J. R., III
1969a Historic site archaeology at Mission San Diego de Alcala. Masterkey 43(3):100-108

This is mainly a discussion of historic site archaeology.

Moriarty, J. R., III
1969b San Dieguito complex: suggested environmental and cultural relationships. Anthropological Journal of Canada 7(3):2-18.

Discussion of characteristic traits of Southern California San Dieguito industries and environmental reconstruction.

Moriarity, J. R., III
1970 Reconstruction of the Development of Primitive Religion in California, Southern California Quarterly 52(4): 313-344.

Moriarty, J. R., III
1971 Mission San Diego de Alcala. Newletter of the Society for Historical Archaeology 4(3):21-22.

Moriarty, J. R. III
1975 Historical and archaeological reconnaissance of Vicente Meadows Estates. Ms.

References are made in this report to the history of Rancho Canada San Vicente and to early attempts at irrigation.

Moriarty, J. R. III
1976 Now...that the field has been irrigated. *Brandbook, San Diego Corral of the Westerners* 4:41-49.

This article describes the effects of the attack on Mission San Diego in 1775.

Moriarty, J. R., III
n.d. California archaeological radiocarbon dates 1950-1967, University of San Diego. Ms. University of California Library, San Diego.

Moriarty's paper lists Californian C^{14} dates.

Moriarty, J. R., III, G. Shumway and C. N. Warren
1959 Scripps Estate Site I (SDi 525). *Archaeological Survey Annual Report 1958-1959*. pp. 185-216. University of California, Los Angeles.

Moriarty, J. R., III, and W. R. Weyland
1971 Excavations at San Diego Mission. *Masterkey* 45(4):124-137.

This is a summary of the archaeological excavations at the Mission.

Morin, Margaret and Ken Hedges
1977 Crawford Ranch survey. Ms., San Diego State University.

Although historical sites are not described, a summary of the history of the area is presented in this report.

Moyer, Cecil
1969 *Historic ranchos of San Diego*. Union Tribune Publishing Company, San Diego.

This is a summary of the history of the *ranchos* of San Diego County.

Munz, Philip A.
1974 *A flora of Southern California* University of California Press, Berkeley and Los Angeles.

Munz is the authoritative source for botantical information on flowering plants of southern California.

Munz, Philip A. and David D. Keck
1949 California plant communities. *El Aliso* 2: 87-105.

Munz, Philip A. and David D. Keck
1959 *A California Flora*. University of California Press, Berkeley and Los Angeles.

This publication delineates the plant communities in Southern California and discusses the environmental factors which determine the communities.

Mykrantz, J. W.
1927 Indian burials in Southern California. *Indian Notes* 4:154-163.

Myrick, David
1963 *Railroads of Nevada and Eastern California--the southern roads*. Vol. 2. Howell-North Books; Berkeley.

This book is referred to because it describes the history of the desert railroads.

Netting, Robert
1977 *Cultural Ecology*. Commings Publishing Co., Inc., Menlo Park, California.

This introductory text includes two general chapters on the nature of hunter-gatherers and their relationship with the environment; the remainder of the book consists of ethnographic examples.

Nolasquez, C.
1973 *Mulu-wetam: the first people*. edited by J. H. Hill, Malki Press, Banning, California.

North, A. W.
1908 The Native tribes of Lower California. *American Anthropologist*. n.s., 10:236-250.

Oakeshott, Gordon B
1971 *California's changing landscapes: A guide to the geology of the State*. McGraw-Hill, New York.

Oakeshott discusses the geological formations in San Diego county.

O'Bannon, Patric
1977 Railroad construction in the twentieth century - the San Diego and Arizona Railway. Ms. Special Collections, University of California, San Diego.

This paper analyzes the construction of the San Diego and Arizona railroad.

O'Connell, J. F.
1971 Recent prehistoric environments in interior Southern California. *University of California Archaeological Survey Annual Report* 13:173-184.

O'Connell correlates a change in aboriginal settlement patterns to an increase in occupation of certain microenvironments and specific resource utilization in interior southern California.

Odens, Peter
1971 *The Indians and I*. Imperial Printers, El Centro, California.

This book includes an account of the McCain massacre.

Ogden, Adele
1927 Hides and tallow. McCulloch Marnell and Company, 1822-1828. *California Historical Society Quarterly* 8:291-296.

Ogden, Adele
1927 Hides and tallow: McCulloch Martnell and Company, 1822-1828. *California Historical Society Quarterly* 8:291-296.

Ogden, Adele
1929 Boston hide droghers along California shores. *California Historical Society Quarterly* 8:291-6.

This is an excellent account of the Boston hide droghers.

Ogden, Adele
1941 *The California sea otter trade, 1784-1848*. University of California Press, Berkeley.

This is the definitive history of the sea otter trade.

Oral History Association (OHA)
— Interviews on file at the Instructional Media Center, Grossmone Community College.

Oral History Project (OHP)
— Interviews on file at SDHS Library, Serra Museum.

Ormsby, Waterman
1960 *The Butterfield Overland Mail*, edited by Lyle Wright and Josephine Bynum. Huntington Library. San Marino.

An account of Ormby's travels through San Diego County.

Pacific Southwest Railway Museum Association
1977 *An alternative proposal for saving the San Diego and Arizona Eastern Railroad through eastern San Diego County and a portion of Imperial County*. San Diego.

A proposal is made for making the railroad into a historical landmark museum.

Pala Chief Gem Mines
1915 Tourmaline: California's most beautiful gem. *Pala Chief Mines of San Diego County, San Diego.*

This is a useful pamphlet.

Palou, Francisco
1955 *Life of Juniperro Serra*. Translated and annotated by Maynard Geiger. Academy of Franciscan History, Washington, D. C.

This biography of the head of the Franciscan missionaries includes an account of the burning of Mission San Diego.

Parker, Horace
1965 The historic valley of Temecula: the early Indians of Temecula. A Paisano Press Librito, Paisano Press, Inc.

This informative pamphlet is written for the layman. It includes information on the Luiseno.

Patencio, F.
1943 *Stories and legends of the Palm Springs Indians as told to M. Boynton*. Times-Mirror Press, Los Angeles.

Pattie, James O.
1905 *The personal narrative of James Ohio Pattie of Kentucky*. Edited, with notes and an introduction by R. G. Thwaites. Clark, Cleveland.

This is the account of the Patties' entrance into Southern California via Mexico.

Peet, Mary R.
1949 *San Pasqual: a crack in the hills*. Highland Press, Culver City, California.

This is a readable account of one of the early settlements of San Diego County. An excellent local history, it is complemented by Rustoold (1968).

Peirce, Rollin
ca. 1954
History of Ramona, a San Diego County village. Ms., SDHS Library, Serra Museum.

This is a useful account.

Perkins, William L.
1964 Those accursed howitzers. *San Diego Historical Quarterly* 10(3):29-34.

Perkins demonstrates the wearying effects of hauling two howitzers across the Southwest.

Peterson, Charles S. et al.
1972 *Mormon Battalion trail guide*. Utah, State Historical Society, Salt Lake City.

This guide includes a map of the route of the Mormon Battalion.

Phillips, George
1975 *Chiefs and Challengers*. University of California Press, Los Angeles.

This is a full account of the relations between Native Americans and others in Southern California in the middle of the nineteenth century, including the Garra uprising.

Phillips, George
1977 Indians in Los Angeles, 1781-1875--economic integration and social disintegration. Ms.

In this article Phillips demonstrates how the Native Americans resisted the work imposed upon them by the missionaries and later western inhabitants of Southern California.

Phillips, Irene
1956 *The Railroad story of San Diego County*. South Bay Press, National City.

This is a useful pamphlet.

Phillips, Richard P.
1976 Natural resources of San Diego County. In *San Diego: an introduction to the region*, edited by Phillip Pryde, pp. 73-85. Kendall/Hunt Publishing Company, Dubuque, Iowa.

This is a synopsis of the natural resources of San Diego County.

Pitt, Leonard
1966 *The decline of the Californios*. University of California Press, Los Angeles.

This is the best account of the decline of Mexican culture in Southern California after 1848.

Polk, Michael R.
1972 Manufacture and uses of steatite objects by the Diegueno. *Pacific Coast Archaeological Society Quarterly* 8(3):1-26.

Polk's article addresses production and use (e.g. ceremonial, secular etc.) of objects manufactured of steatite within southern San Diego County.

Ponchetti, Charles
1973 Interview with William C. Seidel. Ms., Anza-Borrego Desert State Park.

This interview contains information on the history of cattle ranching in the desert area of inland San Diego County.

Pourade, Richard F.
1960 *History of San Diego.*
1967 Union-Tribune Publishing Company, San Diego.

This is a well written history of San Diego County. It emphasizes city history, but does contain a good account of the county's early history.

Prather, Bonnie Jean
1964 Palm Springs Co. Indians. *San Bernadino County Museum Association Quarterly*. 12:1.

An eyewitness account of a 1934 burning of the images.

Price, Glenn W.
1967 *Origins of the war with Mexico*. University of Texas Press, Austin.

Price makes a case for a deliberate war being provoked with Mexico in order for the United States to gain California.

Priestley, Herbert
1913 The Colorado River campaign, 1781-1782, diary of Pedro Fages. *Academy of Pacific Coast Historians* 3(May): 133-233.

Rensch (1955) based his research on this diary.

Quinn, Charles R.
1962 *Mesa Grande Country*. Elena Quinn, Downey, California.

Quinn, Charles R.
1964 *The story of Mission Santa Ysabel*. Elena Quinn, Downey, California.

A popular and useful history.

Ranere, Anthony J.
1970 Prehistoric environments and cultural continuity in the western Great Basin *Tebiwa: the Journal of the Idaho State University Museum* 13(2):52-72.

Raup, H. F.
1959 Transformation of Southern California to a cultivated land. *Annals of the Association of American Geographers* 49(3, p. 2):58-75.

Although not a historian, Raup provides a framework for interpreting the cultural modification of the landscape of Southern California. Raup emphasizes the technological and economic changes that led to the development of irrigated orchards.

Reed, Lester
1963 Old time cattlemen and other pioneers of the Anza-Borrego area. Desert Printers, Inc. Palm Desert.

This partially autobiographical book is an excellent account of early cattle ranching and settlement at the edge of the Colorado Desert. It is based on interviews and personal recollection.

Rensch, Hero E.
1955 Fages' crossing of the Cuyamacas. California Historical Society Quarterly 34:193-208.

In this article Rensch establishes the fact that Fages used a Native American trail in Oriflamme Canyon to cross the Cuyamacas in 1772 and 1782.

Rensch, Hero E.
1950 The Indian place names of Rancho Cuyamaca. Ms., California Division of Beaches and Parks, Cuyamaca Rancho State Park.

Rhoades, Elizabeth R.
1971 Foreigners in Southern California During the Mexican period. R and E Research Associates, San Francisco.

Rhoades provides biographical information on the numerous foreigners living in Southern California before 1848.

Riddell, Francis A.
1962 A bibliography of the Indians of Southern California. Department of Parks and Recreation. Division of Beaches and Parks. Ethnological Report 4.

Rivera y Moncada, Fernando de
1967 Diario del Capitan Fernando de Rivera y Moncada. (Diary of Captain Fernando de Rivera y Moncada). Edited by Ernest Burrus. Ediciones Jose Porrua Turanzas, Madrid.

This diary provides early first-hand descriptions of missionary and Native American activities in San Diego County.

Robinson, Alfred
1846 Life in California. Wiley and Putnam, New York.

Robinson's account is one of the more objective descriptions of life in Southern California before 1848.

Robinson, E.
1933 Fishing arrowpoints from Southern California. Masterkey 7:147-150.

Robinson, W. W.
1948 Land in California. University of California Press, Berkeley.

Robinson traces the evolution of California land from ranchos to cities; he also discusses land laws in California.

Rocq, Margaret M. (ed.)
1970 California local history. Stanford University Press, Stanford (Supplement, 1976)

This is a useful bibliography.

Rogers, M. J.
1929 The stone art of San Dieguito Plateau. American Anthropologist 31(3):454-467.

A comparison of cultural materials of "Shell-Midden" people to "Scraper-Maker" culture to "Mission Indians." Discussion of "Scraper-Maker" tools. Based on crudeness of Shell-Midden lithics. Rogers suggested that the Shell-Midden people (LaJollan) were antecedents to Scraper-Maker culture (San Dieguito).

Rogers, M. J.
1936 Yuman pottery making. San Diego Museum Papers 2.

An early effort towards typing of Yuman pottery in the San Diego and Imperial counties, Rogers includes information on color, decoration and different forms. Some comparative information is included (e.g. Cahuilla data).

Rogers. M. J.
1945 An outline of Yuman prehistory. Southwestern Journal of Anthropology 1(2):167-198.

Outlines pre-ceramic populations, the origin of the ceramic complex and compares the two.

Rogers, M. J.
1966 The Ancient hunters-who were they? In Ancient hunters of the far West, edited by R. F. Pourade pp. 21-108. Union Tribune Pulbishing Company, San Diego.

Discussion of the distribution and variability of San Dieguito sites. Site types, geographic patterning, chronology, artifact assembleges, and postulated settlement-subsistence strategies are outlined. Data from the notes of Malcolm J. Rogers, pioneer archaeologist of San Diego.

Rogers, Spencer L.
1963 The physical characteristics of the aboriginal La Jolla population of Southern California. San Diego Museum Papers 4.

Rogers, Spencer L.
1974 An ancient human skeleton found at Del Mar, California. San Diego Museum Papers 7.

A summary of anthropological observations including history, age, metric and non-metric observations of the specimen.

Rogers, Spencer L.
1977 An early human fossil from the Yuha Desert of Southern California: physical characteristics. *San Diego Museum Papers* 12.

A discussion of the fossil, the Yuha site, the restoration of the skull, the sex and aging of the skeleton, metric and non-metric observations, dentition, stature, racial characteristics and a comparison of the Yuma specimen with La Jollan specimens.

Roloff, Leon F.
1970 A study of a Southern Diegueno olla. Ms., San Diego Museum of Man.

Rubin, M. and H. E. Suess
1955 United States Geological Survey radiocarbon dates II. *Science* 121:481-488.

The Radiocarbon dates listed in this publication include some from San Diego County.

Rust, Horatio N.
1906 A puberty ceremony of the Mission Indians. *American Anthropologist* n.s. 8(1):28-32.

Rustvold, Marjorie M.
1968 San Pasqual Valley: rancheria to greenbelt. M.A. thesis San Diego State University.

This excellent analysis traces the evolution of a representative inland San Diego County community. It is based on fieldwork and interviews as well as on documentary research.

Ryan, Frances B. and Lewis C.
1970 *Early days in Escondido*. Frances Ryan, Escondido.

This book contains useful information on the development of Escondido. Some of the material is also discussed in Ryan (1973).

Ryan, Frances B. and Lewis C.
1973 *Yesterdays in Escondido*. Frances and Lewis Ryan, Escondido.

This book is similar to Ryan (1970).

Sanchez, Nellie van der Grift
1928 Memoirs of a merchant. *Touring Topics* 20(9):14-19, 47-48; 20(10): 36-41, 46-47.

This article contains information on the trade between Northern and Southern California.

San Diego-California Club et al.
1926 *San Diego County, California Agricultural Survey*, 3rd edition. San Diego.

This promotional book includes useful information on inland San Diego County farming and settlement.

San Diego County
ca. 1932
Fact-finding study of social and economic conditions of Indians of San Diego County, California and reports from specialists in allied fields. Ms., Pioneer Room, San Diego County Law Library.

This is a useful report.

San Diego County Department of Agriculture
1926-present
Agricultural production values (annual). Ms., San Diego County Operations Center.

The value for total agricultural production in San Diego County is given in these reports.

San Diego County Planning Commission
1937 San Diego County, California. W. P. A. Project 4525. San Diego.

This is a useful overview of the development of San Diego County.

San Diego County Planning Commission
1938 Report of highway development in San Diego County, California. San Diego.

This is a good reference for early roads.

San Diego County Planning Department
1950 Master plan--major highways. San Diego.

This plan includes a proposal for a tunnel through the Lagunas, as well as information on automobile traffic in the County.

San Diego Herald (newspaper)
1851-1860
Microfilm, Newspaper Room, San Diego Public Library.

San Diego Historical Society
1977 San Diego County pioneer families. San Diego Historical Society, San Diego.

This compilation of family histories emphasizes San Diego City history.

San Diego History Research Center
Interviews. San Diego state University.

Various relevant transcripts of interviews are included in this collection.

San Diego Union (newspaper) (also *San Diego Union Weekly*)
1868-present
Microfilm, Newspaper Room, San Diego Public Library.

Scharf, Thomas
1973 Amiel Weeks Whipple: boundary and railroad surveys in the Southwest: 1849-1854. M.A. thesis, University of San Diego.

Schmid, Dorothy Clark
1963 *Pioneering in Dulzura*. Robert Knapp, San Diego.

This is an excellent local history.

Schnarn, Dennis E. and Jimmy Schnarr
1964 Notes on archaeological investigations of the Indio area. *San Bernadino County Museum Association Quarterly* 12:1.

Schumachker, P.
1875 Method of manufacture of several articles by the former inhabitants of Southern California. *Peabody Museum 11th Annual Report*, 8 258-268.

Schumacher, P.
1879 The method of manufacture in pottery and baskets among the Indian of Southern California. *Reports from the Peabody Museum American Archaeology and Ethnology* 12:521-525. Harvard University.

Schumm, Stanley A.
1965 Quarternary paleohydrology. In *The Quaternary of the United States*, edited by H. E. Wright, Jr. and D. G. Frey, pp. 783-794 Princeton University Press, New Jersey.

Senan, Jose
1962 *The letters of Jose Senan, O.F.M., 1769-1823*. Translated by Paul Nathan and edited by Lesley B. Simpson. Ventura County Historical Society, Ventura.

These letters contain the earliest mention of Peruvian tallow traders in California.

Servin, Manuel
1965 The secularization of the California missions: A reappraisal. *California Historical Society Quarterly* 47(2):133-149.

Servin makes a case for the prejudices of the Franciscan missionaires against the civilian settlers of California.

Shannon, Fred A.
1963 *The farmer's last frontier: agriculture, 1860-1897*. Holt, Rinehart and Winston, New York.

This is an excellent reference work.

Sheldon, Gale W.
1959 Julian gold mining days. M. A. thesis, San Diego State College.

This is a good analysis of the Julian area gold mining.

Shepard, F. P. and Hans E. Suess
1956 Rate of postglacial rise of sea level. *Science* 123(3207):1082-3.

Shinn, G. H.
1941 *Shoshonean days: recollections of a residence of 5 years among the Indians of Southern California, 1885-1889.* Arthur H. Clark Company, Glendale, California.

Shipek, F.
1951 Diegueno pots. *El Museo* 6(2):5-11.

Shipek, F.
1977 *A Strategy for change: the Luiseno of Southern California.* Ph.D. dissertation, University of Hawaii.

A recent work based on Dr. Shipek's work with Lueseno and Diegueno Indian informants. She offers an explanation for the apparent high population density of these groups at the time of contact. Her conclusion being that in pre-contact times the Indians were practicing agriculture. This is reflected, she feels, in their social, political and religous organization.

Shipek, F.
1978 History of Southern California Mission Indians. In *Handbook of North American Indians, California*, Vol. 8, edited by Robert F. Heizer, pp. 610-68 Smithsonian Institution, Washington, D.C.

Shipek discusses the modern reservation Indians in this section and focuses on ecomonic change, land tenure, and political activity.

Shrode, Ida M.
1948 *The Sequent Occupance of the Rancho Azusa de Duarte.* University of Chicago, Chicago.

Although the *rancho* is not located in San Diego County, this excellent work provides a framework for interpreting the evolution of the *ranchos* of Southern California.

Shumway, G., C. L. Hubbs and James R. Moriarty III
1961 Scripps Estate Site, San Diego California: a La Jolla site dated 5460 to 7370 B.P. *Annals of the New York Academy of Sciences* 93:37-132.

Included in this excavation report are radiocarbon dates of the material found.

Shumway, Nina Paul
1961 Friend of the Cahuilla. Desert Magazine 24(1):16-19.

The story of General D. Barrows and his interest in the Cahuilla Indians of Southern California

Simpson, Ruth D.
1953 Shoshonean burial ground excavated. Masterkey 5(27):69.

Slichter, Charles
1905 Field measurements of the rate of movement of underground waters. USGS Water Supply Paper 43.

This article includes a description of the distinctive "stovepipe" well.

Smith, Helen
1969 A brief and interrupted interview with Bartol Duro. Ms., San Diego Museum of Man.

Smythe, William
1908 History of San Diego, 1542-1908. The History Company, San Diego.

This history is most useful for its biographical information and for a close look at some of the events in San Diego that affected the back country.

Snyder, Charles T. and Walter B. Langbein
1962 The Pleistocene lake in Spring Valley, Nevada, and its climatic implications. Journal of Geophysical Research 67(6):2385-2394.

Soto, A.
1960 Recent excavations at San Luis Rey Mission: the sunken gardens. Provincial Annals (Franciscan Order of Friars Minor, Province of Saint Barbara) 22(4):205-210, 247-249.

Soto, A.
1961 Mission San Luis Rey, California: excavations in the sunken gardens. The Kiva 26(4):34-43.

South, Marshall
1939 Campbells of Vallecitos Valley. Desert Magazine 3(2):25-27, 39.

The Campbells, twentieth century ranchers, who experimented with the Brahma breed and also constructed an irrigation system from Mason Valley.

Southern California Rancher.
1936-

This journal contains numerous articles on county agricultural and ranching history.

Sparkman, P. S.
1905 "Sketch of the grammer of the Luiseno language of California" American Anthropologist 7: 656-662.

Sparkman, P. S.
1908 The culture of the Luiseno Indians. University of California Publications in American Archaeology and Ethnology 8(4):187-234.

A brief and early ethnography, this work includes a material culture inventory, a listing of villages or geographic sites, some verbetim accounts of beliefs (e.g. puberty ceremony cautions), and a good ethnobotanical appendix.

Spier, L.
1923 Southern Diegueno Customs. University of California Publications in American Archaeology and Ethnology 20(16):295-358.

The Southern Diegueno are of the most poorly documented groups within the study area. Spier's 1923 work, however, provides an excellent discussion of social organization and ceremonial activity.

Stanford, Leland G.
1978 Devil's Corner and Oliver S. Witherby. Journal of San Diego History 24(2):236-253.

Witherby owned Rancho Rincon del Diablo before it was developed by the Escondido Land and Town Company. This article describes in detail the San Diego County ranch economy before the 1880s.

Staniford, Philip S.
1977 Inside out: anthropological communication of alternatives realities. Phoenix: New Directions in the Study of Man 1(1):36-46.

This article describes the pilgrimage of Staniford and others to Cuchama, a sacred mountain.

Stein, Lou
1975 San Diego County place-names. Tofua Press, San Diego.

This is a useful reference work. It includes a useful bibliography.

Steward, Julian H.
1937 Ethnological recconnaissance among desert Shoshone. In the Smithsonian institution. Explorations and field work of the Smithsonian Institution in 1936, p. 87-92. Washington, D.C.

Steward, Julian H.
1939 Changes in Shoshonean Indian Culture. The Scientific Monthly. 49(12):524-537.

Stewart, Harris B., Jr.

1958 Sedimentary reflections of depositional environments in San Miguel Lagoon, Baja California, Mexico Bulletin of the American Association of Petroleum Geologists 42(11):2567-618.

Storms, W. H.

1893 San Diego County. In Report of the State Mineralogist, edited by William Irelan, Jr. 11:376-393.

This report describes gold mines near Julian and the cement manufacturing plant on Rancho Jamul.

Stott, Kenhelm W.

1950 Stagecoach operation in San Diego and Imperial Counties, 1857-1874. M. A. thesis, San Diego State College.

This is a useful summary.

Strong, W. D.

1929 Aboriginal society in Southern California. University of California Publications in American Archaeology and Ethnology 26.

This is an excellent description of social, political and religous practices of the Serrano, Cupeno, Luiseno, and three subgroups of the Cahuilla. Some references to the material culture are included in descriptions of ceremonial practices. Clan structure, names and locations are detailed.

Stuart, Gordon

1966 San Diego back country 1901. Gordon Stuart, San Diego.

This is a historical miscellany concerning inland County history. Its style is anecdotal, and it does contain some useful historical information.

Studley, Ca.

1884 Notes upon human remains from caves in Coahuilla. Reports of the Peabody Museum of American Archaeology and Ethnology 16-17:233-59.

Sutton, Imre

1965 Land tenure and changing occupance of Indian reservations in Southern California. Ph. D. dissertation, University of California, Los Angeles. (California room, San Diego Public Library).

Sutton describes land ownership and settlement patterns.

Sweeny, Thomas W.

1956 Journal of Lt. Thomas W. Sweeny, 1849-1853. Westernlore Press, Los Angeles.

TAC (Tak), P.

1930 Conversion de Los San Luiseno de Alta California. Proceedings of the 23rd International Congress of Americanists, New York. 1928:pp. 635-648.

Tac, P.

1952 (ca. 1835)
Indian life and customs at Mission San Luis Rey. Edited and translated by Minna and Gordon Hewes. *The Americas* 9:87-106.

This is a description of daily Native American life at Mission San Luis Rey. While possibly influenced by Tac's close association with missionaries, the account is a valuable one.

Taylor, Dan F.

1939 Julian gold. Federal Writers' Project. Typescript, SDHS Library, Serra Museum.

This is an excellent summary of mining in the Julian area. It explains why the Julian mines were not financed by San Francisco capitalists and includes a description of the machinery used at the mines.

Telfer, William B.

1951 Early transportation arteries of San Diego County. M. S. thesis, San Diego State College.

Although this thesis contains errors in location, it is a useful analysis of the evolution of the transportation network of San Diego County.

Thomas, Cyrus

1898 *Introduction to the study of American archaeology*. Robert Clarke, Cincinnati.

Tibesar, Antonine

1956 *The writings of Juniperro Serra*. Washington, D. C.

This collection contains a description of the burning of Mission San Diego.

Toffelmeier, Gertrude and Katherine Luomala

1936 Dreams and dream interpretation of the Diegueno Indians of Southern California. *Psychoanalytic Quarterly* 5(2):195-225.

Townsend, J. B.

1960 Two rock shelters and a village site in Borrego State Park. *Archaeological Survey Annual Report*. 1959-1960, pp. 249-267. University of California, Los Angeles.

This description of excavations within the Borrego desert includes descriptions of both the ceramic and lithic assemblages.

Treganza, A. E.

1942 An archaeological reconnaissance of northeastern California and southeastern California. *American Antiquity* 8(2): 152-165.

Treganza describes the general distribution of archaeological sites in the Colorado desert and discusses two possible cultural horizons.

Treganza, A. E.
1947a Notes on the San Dieguito lithic industry of Southern California and northern Baja California. University of California Publications in American Archaeology and Ethnology. 44: 253-255.

Treganza, A. E.
1947b Possibilities of aboriginal agriculture among Southern Diegueno. American Antiquity 12: 169-173.

Treganza speculates on the possibility of agriculture spreading from the east to the Dieguenos. His evidence, dates from the 1850s.

Trewartha, Glenn
1962 Regional rainfall types: the West. In The earth's problem climates, chapter 18. University of Wisconsin Press, Madison.

Troxell, Harold C.
1957 Water resources of Southern California, with special reference to the drought of 1944-51. U. S. G. S. Water Supply Paper, 1366.

Troxell reports on the effects of twentieth century droughts on the development of southern California.

True, D. L.
1954 Pictographs of the San Luis Rey Basin, California. American Antiquity 20 (10): 63-72.

This analysis of Luiseno pictographs offers several traits of a diagnostic nature; among them color (predominance of red) and the presence or absence of certain design elements, e.g., crude forms.

True, D. L.
1957 Fired clay figurines from San Diego County, California. American Antiquity 22: 291-296.

True, D. L.
1958 An early complex in San Diego County, California. American Antiquity 23(3): 255-259.

True describes the Pauma complex and compares it with San Luis I and II.

True, D. L.
1966 Archaeological differentation of Shoshonean and Yuman speaking groups in Southern California. Ph. D. dissertation, University of California, Los Angeles.

This compares and contrasts Diegueno and Luiseno material culture.

True, D. L.
1970 Investigation of a Late Prehistoric complex in Cuyamaca Rancho State Park, San Diego County, California. Archaeological Survey Monograph 1. University of California, Los Angeles.

This article provides a description of the archaeological excavation of the prehistoric loci. Also provided is an excellent discussion of the artifacts with an accompanying discussion of Luiseno/Diegueno artifact comparison and distribution. Based upon the results of the survey and excavation of SDi 860, True proposes the Cuyamaca complex.

True, D. L. and C. W. Meighan
1974 Appendix A. Archaeological resources of Palomar Mountain State Park, San Diego County. In Archaeological Investigations at Molpa, San Diego County, California, by D. L. True, C. W. Meighan and Harvey Crew. University of California Press, Berkeley.

The report has descriptions of the sites located during surveys of the Palomar Mountain Area.

True, D. L., C. W. Meighan, and H. Crew
1974 Archaeological investigations at Molpa. University of California Press, Berkeley.

The report provides a description of the results of the excavations at Molpa, a historic Luiseno village; a brief ethnobotany; interpretations of the results of the study; and a discussion of the inability to recognize certain aspects of prehistoric cultures through a study of the archaeological record.

Tuthill, C. and A. A. Allenson
1954 Ocean-bottom artifacts. Masterkey 28(6): 222-231.

Underhill, R.
1941 Indians of Southern California. United States Department of the Interior, Bureau of Indian Affairs, Branch of Education.

This secondary source provides an easily understood and somewhat brief description of southern California Indians.

Union Title and Trust Company
ca. 1904
Abstract of title to Rancho Valle de San Jose and the Rancho San Jose del Valle, County of San Diego, State of California. Pioneer Room, San Diego County Law Library.

This is the complex legal history of "Warner's Ranch".

United States Congress
1857 Indians affairs in the Department of the Pacific. 34th Congress, 3rd Session, House Executive Document 76.

This document includes reports by Heintzelman on the Kamias and on the road between Fort Yuma and San Diego, as well as a copy of Wozencraft's 1852 treaty with the Dieguenos.

United States Office of the Census
1872-
1952 *United States Census*. (9th-17th). Government Printing Office, Washington, D. C.

United States Postal Service
1978 *Post office directory*. U. S. Government Printing Office, Washington, D. C.

Valentine, J. W. and R. F. Meade
1961 California Pleistocene paleo-temperatures. *University of California Publications in Geological Science* 40: 1-46.

Valory, Dale
1971 *Guide to ethnological documents (1-203) of the department and museum of anthropology ,University of California, Berkeley, now in the University archives*. University of California Archaeological Research Facility, Department of Anthropology. Berkeley.

Van Camp, Gena Ruth
1973 A study of Diegueno pottery: extrinsic qualities and regional distribution. Ms., San Diego Museum of Man.

Van Dyke, Theodore
1886 *Southern California*. Fords, Howard and Hulbert.

Van Dyke, an early San Diego County resident, knew the back country well. This is a valuable first-hand description of the early Anglo American settlement.

Van Dyke, Theodore
1888 *The city and county of San Diego--illustrated and containing biographical sketches*. Leberthon and Taylor, San Diego.

Because of his familiarity with the back country, this work contains invaluable descriptions of the BLM study areas lite in the nineteenth century.

Velasquez, Jose
1783 See Selected Documents.

Wallace, A. and E. M. Romney
1972 *Radioecology and ecophysiology of desert plants at the Nevada test site*. U. S. Atomic Energy Commission, Office of Information Services, TID-25954, Oak Ridge.

This publication discusses the creosote bush plant community.

Wallace, William J.
1955 A suggested chronology for Southern California coastal archaeology. *Southwestern Journal of Anthropology* 11(3): 214-230.

A regional sequence is presented for the archaeology of coastal Southern California.

Wallace, William J.
1958 An Archaeological reconnaissance in Bow Willow Canyon, Anza-Borrego Desert State Park. Masterkey 32: 155-166.

Wallace, William J.
1960a Archaeological resources of the Buena Vista Watershed, San Diego County, California. Archaeological Survey Annual Report 1959-1960, pp. 277-306. University of California, Los Angeles.

The results of the survey are described and analysed within the context of the cultural sequence represented in San Diego County.

Wallace, William J.
1960b Surface archaeology of Indian Hill, Anza-Borrego Desert State Park. Maskerkey 34: 4-18.

Wallace, William J.
1962a Archaeological explorations of the south section of Anza-Borrego State Park, Sacramento, California. State of California, the Resources Agency, Department of Parks and Recreation Division of Beaches and Parks, Interpretation Services Section.

Wallace, William J.
1962b Prehistoric cultural development in the southern California deserts. American Antiquity 28: 172-180.

Wallace discusses the four chronological prehistoric occupational sequences of the Southern California desert region. These technological sequences, based on artifactural remains, begin with hunting and related activities, and end with a seed collecting type of subsistence. Future research needs are discussed in the framework of subsistence questions.

Wallace, William J.
1968 Prehistoric seasonal campsites in southern California. Masterkey 42: 134-141.

Wallace, William J.
1971 A suggested chronology for Southern California coastal archaeology. In The California Indians: a Source Book. R. F. Heizer and W.A. Whipple, eds., pp. 186-202. University of California Press, Berkeley.

Wallace, William J.
1978 Post-pleistocene archaeology, 9,000 to 2,000 B. C. In Handbook of North American Indians, California. Vol. 8. Edited by Robert F. Heizer, pp. 25-36. Smithsonian Institution, Washington, D. C.

Wallace discusses three periods of prehistory in California. Sources of additional information are also provided at the conclusion of this section.

Wallace, William J. and E. S. Taylor
1958 An archaeological reconnaissance in Bow Willow Canyon, Anza-Borrego State Park. Masterkey 32: 155-166.

Walter, H. and E. Stadelmann
1974 A new approach to the water relations of desert plants. In Desert Biology, edited by G. W. Brown. Academic Press, New York, Vol. II.

Discusses the process of storing water by desert plants. Additional information is also provided on desert plants.

Warn, G. Frederick
1974 The story of Lake Wohlford (and) Rancho Guejito y Canada de Palomia. E Clampus Vitus, Spring Clampout. May

These anecdotal articles include useful documentary research on the history of the Escondido area.

Warner, J. J.
1857 Eagle fiesta of the California Indians (Luiseno). Los Angeles Star (Newspaper), February 2.

Warren, C. N.
1964 Cultural change and continuity on the San Diego Coast. Ph. D. dissertation, University of California, Los Angeles.

The body of this report discusses the La Jolla complex. General concepts and models of change and continuity are reviewed in association with economic models. Temporal periods and cultural stages for the coast are postulated.

Warren, Claude N.
1967 The San Dieguito complex - a review and hypothesis. American Antiquity. 32(4): 168-185.

Review of San Dieguito terminology and its problems; San Dieguito I, II and III traits from San Diego County, San Bernardino County, Pinto Basin, Lake Mohave, Tonopah Lake, Death Valley, Panamint Basin, Owens Lake; dating of the San Dieguito complex; and possible origins.

Warren, Claude N.
1968 Cultural tradition and ecological adaptation on the Southern California coast. Eastern New Mexico University Contributions in Anthropology 1(3): 1-14.

Discussion of the temporal and spacial distribution of native populations along the Southern California coast. Correlates changes in environment with adaptive responses of the human populations.

Warren, Claude N.
1971 Comments on 'Man and Environment in the Late Prehistory of Southeast California". In Archaeology Survey Annual Report 13: 197-201. Department of Anthropology, University of California, Los Angeles.

Warren discusses the differences between the "total" and "effective" environment. He feels by developing detailed models and ecological relationships one can find the biases of an extractive system. A prediction of culture change with correlations of changes in ecological relationships and population increases can then be made.

Warren, Claude N. (ed.)
1966 The San Dieguito type site. San Diego Museum Papers 5.

M. J. Rogers' 1938 excavation of the "Harris Site". Rogers' notes concern excavation techniques, description and interpretation of features and artifacts of San Dieguito, La Jollan, and Yuman cultural affiliation. Conclusion by C. N. Warren.

Warren, Claude N. and Max G. Pavesic
1963 Shell midden analysis of site SDi-603 and ecological implications for cultural development of Batiquitos Lagoon, San Diego County, California. Appendix I of archaeological investigations at Batiquitos Lagoon, San Diego County, California by R. H. Crabtree, C. N. Warren and D. L. True. Archaeological Survey Annual Report, 1963. University of California, Los Angeles.

Inventory and description of shell found in column samples and a review of the problems and hypotheses concerning aboriginal population shifts and environmental change.

Warren, Claude N. and H. P. Thompson
1959 Test excavations at the Del Mar site (SDi 191). Archaeological Survey Annual Report, 1958-1959, pp. 217-223.

Warren, Claude N. and D.L. True
1961 The San Dieguito complex and its place in California prehistory. Archaeology Survey Annual Report, 1960-1961, pp. 246-291. University of California, Los Angeles.

Discussion of the excavation of the "Harris Site" undertaken by the U. C. L. A. archaeological survey. Geologic strata and associated artifacts are described. Conclusions on population size, subsistence strategies are offered. Comparisons are made between the San Dieguito and other cultural complexes.

Warren, Claude N., D. L. True, and A. A. Eudey
1961 Early gathering complexes of western San Diego County: the results and interpretations of an archaeological survey. Archaeological Survey Annual Report 1960-1961. pp. 1-106. University of California, Los Angeles.

The report discusses the distribution of sites in the Valley Center, San Marcos-Escondido, Green Valley, lower San Dieguito River and Batiquitos Lagoon areas. Artifacts are described and a suggested outline of the prehistory of the areas is presented.

Waterman, T. T.
1910 The religious practices of the Diegueno Indians. University of California Publications in American Archaeology and Ethnology 8: 271-358.

A thorough discussion of Diegueno ceremonial practices, this discussion includes information on the Chinichinch cult, colors associated with direction, songs, and ceremonial paraphernalia.

Waterman, T. T., et al
1921 Native houses of western North America. New York Museum of the American Indian Heye Foundation. Indian Notes and Monographs.

Watkins, Lee H.
1969 John S. Harbison: pioneer San Diego County beekeeper. Journal of San Diego History 15(4): 17-26.

Weaver, R. A.
1977 Cultural resource identification. Sundesert Nuclear Project. Ms. Archaeological Research Unit, University of California, Riverside.

Weaver describes the methodology used and analyses of the results of the survey, which was a sample survey of two-mile wide transmission line corridors.

Weaver, R. A.
1976 Sundesert Nuclear Project - archaeological inventory and assessment of two alternative corridor segments (alignments 43 and 44) in the In-Ko-Pah Gorge area, Imperial and San Diego counties, California. Ms. Archaeological Research Unit, University of California, Riverside.

The report describes the systematic survey and the results.

Webb, Edith B.
1952 Indian life at the old missions. W. F. Lewis, Los Angeles.

This is an excellent description of the day-to-day functioning of the mission system.

Webb, Walter P.
1931 The Great Plains. Ginn and Company, Boston.

The history of inland San Diego County can be compared to that of the Great Plains.

Weber, F. Harold

1963 Geology and mineral resources of San Diego County, California. California Division of Mines and Geology, County Report 3.

This is a comprehensive description of the mineral resources of San Diego County, including the historical development of mining. It contains an excellent bibliography.

Weide, David L.

1976 Regional environmental history of the Yuha Desert. In Background to Prehistory of the Yuha Desert Region Ballena Press Anthropological Papers No. 5.

Detailed information is provided in Weide's section concerning the environmental history of the Yuha Desert.

Weide, Margaret L.

1973 Archaeological inventory of the California Desert: a proposed methodology. U. S. Department of Interior, Bureau of Land Management, California Desert Planning Program.

The report presents a suggested sampling methodology for inventorying the BLM lands in the desert. With many modifications, the methodology is being used in an inventory of the BLM lands in the California desert.

Weide, Margaret L. and J. P. Barker

1974 Archaeological inventory of the Yuha area. In Background to prehistory of the Yuha area. Edited by P. J. Wilke, pp. 90-96. Bureau of Land Management.

As an overview for BLM, this is a summary of archaeological information concerning the Yuha area.

Wells, Helen

1977 Limited testing of archaeological research sampling design in Davies Valley, California. Ms. Archaeological Research Unit, University of California, Riverside.

Wells describes the sampling methodology used in the survey and the results. With some modification to the methodological procedures, Wells attempted to apply and test the sampling methodology described by Weide (1973).

Wheeler, S.

1938 A site at Descanso, California. Masterkey 12: 192-194.

Whetstone, Margie L.

1963 The Escondido Story. San Diego Historical Society Quarterly 9(3): 29-33.

This article is a brief history of Escondido.

Whipple, Amiel W.
1961 The Whipple report. Edited by E. I. Edwards. Westernlore Press, Los Angeles.

Lt. Whipple, an International Boundary Commission Surveyor, kept a diary of his trek from San Diego to the Colorado River via Warner's Pass. This diary contains valuable descriptions of the settled Native Americans of inland San Diego County.

White, R. C.
1953 Two surviving Luiseno Indian ceremonies. American Anthropologist 55: 569-578.

White, R. C.
1957 The Luiseno theory of "knowledge". American Anthropologist 59: 1-19.

White, R. C.
1959 A reconstruction of Luiseno social organization. Ph. D. dissertation, University of California, Los Angeles.

This is a very complete work on Luiseno social organization. Chapters include people and environment, economy and warfare, religion and its role in Luiseno life, and reconstruction of the social structure. Maps of Luiseno rancherias and a short glossary of important terms are included.

White, R. C.
1963 Luiseno social organization. University of California Publications in American Archaeology and Ethnology 48(2): 91-194.

Social organization of the Luiseno and its relevance to the economic and environmental conditions is the focus of this article. White gathered his information from informants, archaeological studies and historic documents.

White, R. C.
1976 Religion and its role among the Luiseno. In Native Californians: a theoretical retrospective, edited by L. J. Bean and T. Blackburn, pp. 355-379. Ballena Press, Ramona, California.

This discussion of Luiseno religious attitudes addresses such topics as the Luiseno character revealed in religious patterns and basic patterns of Luiseno religious thought as applied to different religious systems Well written and informative, this article is a valuable reference.

Williamson, Robert S.
1855 Report of explorations in California for railroad routes to connect with the routes near the 35th and 32nd parallels of north latitude. In Explorations and surveys for a railroad route from the Mississippi to the Pacific Ocean. Vol. 5, part I. United States War Department, Washington.

Williamson explored the Warner's Pass as a possible railroad entry into Southern California.

Wilson, B.
1952
(1852) The Indians of Southern California in 1852. Edited by John Caughey. Huntington Library, San Marino.

This is a contemporary description of the role of the Native Americans in the society and economy of Southern California.

Wilson, Iris H.
1965 William Wolfskill 1798-1866. Arthur M. Clark Company, Glendale, California.

The Wolfskills once owned Rancho Rincon del Diablo; this is a useful biography.

Wirth Associates Cultural Resources Office
1978 Documentation of the Phase II (Plant Site to Devers and Miguel Substations) archaeological inventory report (draft).

The report describes, in detail, the methodology employed during the Phase II Sundesert archaeological studies. In addition, the base data collected during the study is compiled and presented in the report.

Woodward, Arthur
1948 Lances at San Pascual. California Historical Society Special Publication 22.

This is an excellent account of the battle. See also Johns (1973).

Woodward, J. A.
1968 The Anniversary: a contemporary Diegueno complex. Ethnology 7: 86-94.

Wright, Carroll D.
1894 Condition of Indians in California. In Report on Indians taxed and not taxed. p. 199. Eleventh Census of the United States. U. S. Government Printing Office, Washington, D. C.

Wright, William L.
1961 The Warner's Ranch Butterfield Station puzzle. Westerners' Brand Book Reprint.

Wright established the fact that the Wilson store, where a marker has been placed, was not the site of the Butterfield Station, but Warner's Ranch.

Wrighington, Juana Machado Alipaz
1878 Times gone by in Alta California. Translated and edited by Raymond Brandes. Ms., SDHS Library, Serra Museum.

Although Wrightington lived in San Diego, her account is relevant to the social history of San Diego County.

Yates, Lorenzo G.
1887 Archaeology of California: Southern California. In *Prehistoric implements: a reference book*, edited by Warren K. Moorehead, pp. 230-252. Robert Clarke, Cincinnati.

Young, Otis, Jr.
1970 *Western mining*. University of Oklahoma Press, Norman.

This is an excellent analysis of western mining technology.

Zink, Orion
1972 The stage to El Centro. *Journal of San Diego History* 18(1): 19-23.

APPENDICES

A. Agency-Designated Historic Sites

B. Chronology of Historic Events

C. Collections

D. Ethnobotany

E. Ethnozoology

F. Historic Native American Villages and Associated Sites

G. Post Offices, BLM Study Areas

H. San Diego County Population, 1870-1950

I. San Diego County Radiocarbon Dates

J. Selected Historic Documents

K. Selected Photographs, Title Insurance and Trust Company, Historical Collection

L. Agency and Individual Contacts

APPENDIX A

AGENCY DESIGNATED HISTORIC SITES

National Register of Historic Places

Oak Grove Butterfield Stage Station (10/15/1966)

Warner's Ranch (10/15/1966)

Hotel Robinson (Julian)

Historic American Buildings Survey

Asistencia de San Antonio de Pala

Oak Grove Butterfield (Overland Mail Company) Stage Station

Warner's Ranch

Registered California State Historical Landmarks

243	Assistencia San Antonio de Pala
304	Vallecito Stage Station (County Park)
311	Warner's Ranch
369	Chapel of Santa Ysabel (Asistencia)
411	Campo (Gaskill) Stone Store
412	Julian
452	Mule Hill
472	Box Canyon
482	Camp Wright
502	Oak Grove Stage Station
533	San Pasqual Battlefield (State Historic Park)
639	Palm Springs (on BLM land; See USGS map).
647	Butterfield Overland Mail (Company) Route (See Figure 2)

APPENDIX A (continued)

793	San Felipe Valley and Stage Station
858	Fages Trail (Oriflamme Canyon; See Figure 2)

San Diego County Environmental Development Agency Historic Sites Survey (1973)

(These sites have been mapped on the BLM USGS maps. Those marked with an asterick (*) are incorrect designations.)

2-100	Asistencia de San Antonio de Pala
3-100	Oak Grove Stage Station
3-200	Camp Wright
8-400	Ortega Adobe
9-100	San Pasqual Battlefield
9-025	Ballena School
9-050	Friends Church (Ramona)
9-075	Ramona Town Hall
9-200	Verlaque House (Ramona); adjacent to Ramona Pioneer Store
10-100	Butterfield (Overland Mail Company) Stage Station at Warner's Ranch
10-150	George Sawday House
10-200	Julian Memorial Park
10-300	Casa de Rancho San Jose del Valle*
10-400	Casa de Rancho Santa Ysabel
10-500	House of Jeff Swycaffer
10-600	Warner's Ranch
10-650	Washington Mine (Julian)
10-700	Wilson House
11-100	Box Canyon

APPENDIX A (continued)

11-200	Mormon Battalion Trail
11-300	Puerta
11-400	San Felipe Valley Stage Station
14-050	Atkinson Brothers Toll House (also see Figure 2)
14-150	Peterson House
16-100	Vallecito Stage Station (County Park)
17-100	Palm Springs
21-100	Campo (Gaskill) Stone Store
22-100	Mountain Springs Stage Station (Imperial County)

Points of Historical Interest

Ferrarra Winery (Escondido)

Ramona Pioneer Store (adjacent to Verlaque Adobe, San Diego County Environmental Development Agency (1973), No. 9-200).

Ramona Town Hall (see 9-075)

Wheelbarrow or Odometer Survey (Julian)

APPENDIX B

CHRONOLOGY OF HISTORIC EVENTS

Sociopolitical History (including settlement)

1769	Spanish Franciscan missionaries and first settlers arrive in California; Mission San Diego consecrated.
1774	Mission San Diego moved upstream.
1775	Mission San Diego destroyed by Native Americans.
1781	Los Angeles pueblo (town) founded.
1798	Mission San Luis Rey founded.
1810	Granary established at Pala; Asistencia San Antonio de Pala founded later.
1818	Asistencia Santa Ysabel founded.
1821	Mexico becomes independent of Spain; Spanish Franciscan missionaries continue to control best lands.
1823	Rancho Los Penasquitos granted.
1820s-1840s	Sonorans arrive via Sonora Trail; Anglo American fur trappers arrive via Gila Trail.
1820s-1840s	Native Americans raid inland San Diego County.
1828	Patties arrive in San Diego.
1831	Jonathan Warner arrives in San Diego County.
1834	Mission property secularized; Californio ranchers take over (until 1860s and 1870s).
1835	San Diego pueblo founded.
1835	Native American rancheria founded at San Pasqual Valley.
1837	Rancho Jamul raided by Native Americans (Quechans).
1840	Rancho Valle de San Jose granted to Jonathan Warner.
1843	Rancho Rincon del Diablo granted to Juan Bautista Alvarado.

APPENDIX B (continued)

1845	Rancho Cyamaca granted to Agustin Olvera.
1846	War declared on Mexico.
1846	Keanry and Pico meet at Battle of San Pasqual.
1848	Guadalupe Hidalgo Treaty signed.
1848	Gold Rush begins; Sonorans are the first to arrive.
1851	Private Land Claims Act passed by U. S. Congress.
1851	San Bernardino area becomes part of Los Angeles County.
1851	Native Americans burn Warner's Ranch (Garra Uprising).
1852	O. M. Wozencraft peace treaty signed at Santa Ysabel.
1853	Preemption Act of 1841 extended to California.
1853	San Bernardino County established.
1855	First Anglo American grain crops planted in Ballena Valley.
1855-6	Major droughts and competition hurts southern California ranchers; Californios begin borrowing money and selling land.
1859	First San Diego County post office established at Warner's Ranch.
1862	United States passes Homestead Act.
1863-4	Great drought: Californios begin to mortgage and lose lands.
1870	Post offices established at Poway, Oak Grove, Ballena, Campo and Julian.
1870	San Pasqual Reservation established by Executive Order.
1870-1871	Droughts force settlers to abandon farms; cattle die.
1871	San Pasqual Reservation revoked.
1872	No Fence Act passed; farming expands, cattle ranching declines.
1872	Post office established at Bernardo.
1872	Post office established at Banner.

APPENDIX B (continued)

1874	Post office established at San Pasqual.
1875	Native American Reservations established by Executive Order.
1875	Anglo Americans and Mexicans do battle at Campo.
1878	Native Americans evicted from San Pasqual Valley.
1882-1887	Railroad boom takes place: Anglo Americans arrive in great numbers.
1883	Paul Sentenac homesteads 160 acres near Scissor's Crossing.
1883	Rancho Rincon del Diablo sold to Escondido Land and Town Company.
1883	Amos Verlaque establishes store in Nuevo (later known as Ramona).
1883	Things establish store at Potrero.
1884	James E. Mason patents land in Vallecito Valley.
1886	Brick factory, bank, hotel established at Escondido.
1886	Post office established at Ramona.
1886	Frank Clark buys land in Dulzura Valley.
1888	City of Escondido incorporated.
1889	San Diego Flume brings water to San Diego from Cuyamaca Lake.
1892	Store at Tecate established by Damon Thing.
1893	Indian Reservations patented.
1893	Riverside County established.
1907	Imperial County established.
1910	San Pasqual Reservation established.
1910	James E. Mason buys land in Canebrake Canyon.
1912	Mexican border fence constructed.
1912	Daleys grant corner of Rancho Jamul to Catholic Church in trust for Native Americans.
1912	Homestead Act residency requirement reduced; acreage doubled.

APPENDIX B (continued)

1915	Use of foreign-born laborers spreads in southern California.
1916	Campbells settle in Vallecito Valley.
1916	San Diego County rivers flood, destroying roads, tracks, farms, orchards.
1919	San Diego Bay becomes home base for U.S. Navy's Pacific Fleet.
1924	U. S. Border Patrol established in area.
1933	R. Crawford buys land in Canebrake Canyon.
1933	Anza Borrego Desert State Park established.
1933	Rancho Cuyamaca State Park established.
1934	Taylor Grazing Act Passed.

Technical History (agriculture and water resources)

1769-1834	Missionary agriculture and animal husbandry; Mediterranean crops; dams, ditches *(zanjas)*, some tile ditches; metal tools; field crops, vineyards, orchards; livestock (cattle, sheep, horses, mules); cottage industry (weaving, candle-making, tile-making, carpentry, leather-working, etc.); heavy wagons *(carretas)*
1834-1870s	Cattle ranching proliferates.
1847	Anglo American wagons brought overland into San Diego County by Mormon Battalion.
1868	Metal-bladed windmills spread to southern California.
1870	Steam- and water-powered stamp mills installed at Julian area gold mines.
1871	First hay bailer used in San Luis Rey Valley.
1872	Steam-powered pumps developed.
1872	First frame house constructed in San Pasqual Valley.
1873	East San Pasqual Ditch constructed.
1873	Cast-iron irrigation pipe developed.
1877	Steam-powered pumps in use in San Diego County.

1880	Sickler brothers establish grist mill near Pala.
1882	Concrete irrigation pipe developed.
1885	Electrically-powered pumps developed
1887	California legislature passes Wright Act (Irrigation Districts).
1887	West San Pasqual Ditch constructed.
1888	Concrete dams developed.
1888	Sweetwater Dam constructed.
1889	Escondido Irrigation District organized.
1894-5	Bear Valley (Wohlford) Dam constructed above Escondido.
1896	Otay Dam constructed.
1900	Deep wells drilled at Julian.
1909	Dulzura (San Diego City) Conduit constructed between Lake Barrett and Lower Otay Reservoirs.
1910	Irrigation attempted at Palm Springs (Mesquite Oasis).
1914	Pauma Mutual Water Company organized.
1917	Hodges Dam built.
1918-1922	Harper brothers build dams east of Blair Valley for cattle raising.
1922	Henshaw Dam built.
1923	Vista Irrigation District organized.
1925	Fallbrook and Ramona Irrigation Districts organized.
1947	First barrel of Colorado River Aquaduct completed into San Diego County.
1954	Second barrel of Colorado River Aquaduct completed.

Economic History

1770s-1810	Missionary establishments supplied by ship from New Spain (Mexico).

APPENDIX B (continued)

1770s-1820s	Sea otter furs sold to China traders.
1810	Last Spanish supply ship arrives in California; missions become self-sufficient.
1812	First Peruvian tallow trader arrives in California; hide and tallow trade begins.
1822	Hide and tallow contract arranged between missions and English firm.
1828	Boston hide droghers enter hide and tallow trade.
1830s-1848	Hide and tallow trade expands; southern California wine exchanged for northern California flour and milled lumber; mules traded for eastern manufactured goods and New Mexican wool products.
1849-1876	Gold Rush and pre-railroad travel stimulates local economy.
1849-1870s	Cattle herded to northern California.
1850s-1860s	Native Americans contributed significant proportion of County's agricultural production.
1850s-1890s	Grain raised in inland San Diego County.
1869	Frank Kimball experiments with fruit trees at National City.
1869	J. A. Harbison introduces honeybees to San Diego County.
1869	Placer gold discovered at Coleman Creek.
1870-1875	First Julian gold rush takes place.
1870s-1880s	Sheep raising proliferates in inland San Diego County.
1872	Tourmaline discovered near Pala.
1873	Navel oranges introduced into southern California
1874	Valencia oranges introduced into southern California
1880	First San Diego County Fair held
1885	San Diego County becomes chief honey producer in California.
1880s-Present	San Diego County specializes in irrigated orchards.
1888	Julian mines reopened.

1889	Granite quarried near Foster.
1891	Cement manufactured at Rancho Jamul; enterprise fails due to high transportation costs.
1894	J. Judson establishes dairy in San Pasqual Valley.
1898	Tourmaline discovered near Mesa Grande.
1898	Cyanide process used on tailings of Julian area gold mines.
1901	Orofino gold mine near Escondido worked.
1905	San Diego County gemstone production peaks.
1908	California Fruit Growers Exchange establishes packing house at Escondido.
1908	Gold discovered near Dulzura.
1909	First Apple Day celebrated in Julian.
1914	First commercial grove of avocados planted.
1920s	Large local consumption market grows in southern California.

Exploration and Transportation

1540	Alarcon ascends Colorado River.
1542	Rodriguez discovers San Diego Bay.
1602-1603	Vizcaino explores coasts of California.
1769	Franciscan missionaries, soldiers and first settlers travel overland and by ship to San Diego.
1772	Pedro Fages follows Native American trail via Oriflamme Canyon.
1782	Fages returns from Colorado Desert to San Diego via Oriflamme Canyon.
1785	Fages explores Jacumba Pass.
1795	Fray Juan Mariner and military escort explore inland San Diego County as far as San Jose Valley (Warner Springs area).

APPENDIX B (continued)

1820s	Mexican mail route established via Warner's Pass, discovered by Santiago Arguello (Sonora Trail).
1846	Kearny comes through Warner's Pass route.
1847	Mormon Battalion established wagon road through Warner's Pass.
1848	Sonoran and Anglo American gold seekers begin using Warner's Pass route, now known as Southern Emigrant Route.
1848	Mail carried to Fort Yuma over Alternate Eastern Route (partly through Mexico).
1849	International Boundary Commission surveyors travel from San Diego to Colorado River.
1851	Captain Lyon established U. S. Army route to Fort Yuma via Cottonwood Creek and Jacumba Pass.
1853	Warner's and Jacumba passes explored by U. S. Corps of Topographic Engineers.
1854	San Pasqual Road declared first County Road.
1854	San Diego and Gila, Southern Atlantic and Pacific Railroad Company incorporated.
1854-1858	U. S. Army/Birch Mail route operates via Oriflamme Canyon.
1858-61	Butterfield Overland Mail Company operates via Warner's Pass and Southern Emigrant Route.
1858	Butterfield Connection established between San Diego and Temecula.
1861	Camp Wright established on Southern Emigrant Route.
1861-1865	Military use Warner's Pass route.
1865	Smith-Groom route established via Pine Valley and Jacumba Pass.
1866	Phineas Banning establishes stagecoach line between Los Angeles and Fort Yuma via Warner's Pass.
1866-1868	Warner's Pass route declines.
1868	Post office established at Milguatay (Campo), on road to Fort Yuma.

APPENDIX B (continued)

1868	San Diego County Road Districts established.
1870-4	Toll roads established in San Diego County, between Julian and Banner (Wilcox), Santa Ysabel and Julian, Foster and Ramona (Atkinson) and San Diego and Fort Yuma (San Diego-Fort Yuma Turnpike Company)
1872	Tom Scott of Memphis, El Paso and Pacific Railroad Company arrives to promote transcontinental railroad to San Diego Bay; scheme abandoned during Panic of 1873.
1880	California Southern Railroad Company chartered.
1882	California Southern railroad constructed between National City and Colton.
1884	California Southern railroad tracks washed out in Temecula Canyon.
1885	Atchison, Topeka and Santa Fe railroad constructed to National City.
1885	San Diego receives its first transcontinental railroad passengers.
1887	Railroad real estate boom peaks and then collapses.
1887	Railroad spur constructed to Escondido.
1889	San Diego, Cuyamaca and Eastern railroad built to Foster.
1880s	Railroads allows exports to be made and also lead to regional specialization.
1906	San Diego and Arizona Railway Company incorporated.
1907	Work begins on San Diego and Arizona railroad.
1909	San Diego County Highway Commission established.
1911	C. W. Grise establishes Imperial Valley Limited auto "stage" service between San Diego and Imperial Valley.
1913	Mountain Springs road dedicated.
1914	San Diego and Arizona railroad work at Carrizo Gorge (Canyon) begins; Dos Cabezas Spring supplies water to work crews.
1916	Campo reached by San Diego and Arizona railroad.
1919	San Diego and Arizona railroad completed.

APPENDIX B (continued)

1919-1939	Inland county roads paved.
1923	San Diego becomes terminus of Lee Transcontinental Highway.
1927	Mountain Springs grade paved.
1976	San Diego, Arizona and Eastern railroad tracks washed out.

APPENDIX C

COLLECTIONS

AMERICAN PHILOSPHICAL SOCIETY LIBRARY

The American Philosphical Society Library, which is located in Philadelphia, Pennsylvania, has no pertinent collections concerning the San Diego County.

ANZA-BORREGO DESERT STATE PARK

Borrego Archaeological Research Center

The majority of prehistoric artifacts housed in the Borrego Archaeological Research Center are isolated surface finds with general or no provenience. Miscellaneous collections include the following:

1. 622-1-126 through 622-1-130, excavations conducted by William Seidel in Coyote Canyon prior to 1974, including prehistoric ceramic and lithic materials, shell and historic materials; 5 boxes unsorted.
2. 622-4-1 through 622-4-2; 622-4-5; 622-4-21 through 622-4-23, Lloyd T. Findley collection, surface finds from Mason Valley, including prehistoric ceramic and lithic materials, shell beads.
3. 622-4-4, Lloyd T. Findley collection, surface finds from Borrego (near Borrego Sink), prehistoric ceramic and lithic materials.
4. 622-1-45, surface collections conducted by William J. Wallace, 1958-61, at Bow Willow Canyon and the Indian Hill district; and test excavations at Bow Willow 9 and Indian Hill Rockshelter; 43 boxes, sorted by site (See William J. Wallace, 1962, Archaeological explorations in the southern section of Anza-Borrego Desert State Park, Archaeological Report 5, State of California, Department of Parks and Recreation, Sacramento).
5. 622-1-277, surface collection conducted by Marge Morin at Jacumba, SDi 2700, July, 1975.
6. 622-1-230 through 622-1-274; 622-1-286 through 622-1-489; 622-1-507 through 622-1-788; 622-1-791 through 622-1-830, surface collections from recorded sites collected by Rober Bergole; San Dieguito I-III stone tools; items accessioned but not catalogued. (Collections conducted by Dr. Clement W. Meigham in 1958 are housed at the University of California, Los Angeles. See C. W. Meigham, 1959, Archaeological Resources of Borrego State Park, Archaeological Survey Report, 1958-59, UCLA).

The majority of historic artifacts also consist of miscellaneous isolated surface finds associated primarily with mining or military activities dating before the early 1940s. They also include bottles, tin cans, tin pots, etc.

1. Mining Claims, 1920s-1950s: 622-x-23, 622-x-696, 622-1-52, 622-1-54, 622-1-55, 622-1-57, 622-1-58, 622-1-59. These are mining claims and their containers, collected from the field.

Historical documents include Oil Placer Location markers, 1927, 1928, "Raven #5" Lode Mining Claim, 1955; and oil and gas leases.

The Center houses a number of interviews. There are transcripts of interviews with Mr. and Mrs. Vermal Clark (William Seidel, 1973), Mrs. Marion Anderson (W. Seidel, 1973), Mr. Charles Ponchetti (Seidel, 1973) and Mrs. Joan McCain Graves (Seidel, 1973). The Graves and Anderson interviews are also on tape. Interviews with Howard Bailey (Spring, 1974) and Fred Clark (n.d.) are on tape. In addition, the cataloging of the Alta Duval photographic collection has been recorded by Seidel and Bergole, 1974.

Photographs include color slides of recorded sites; 30 photographs of historic structures, people (including Native Americans), and places, from the early 1900s; and the Alta Duval Collection.

Collections are available for study for qualified and authorized individuals or institutions. Prior arrangements must be made through the Area Manager, Anza-Borrego Desert State Park, P.O. Box 428, Borrego Springs, CA 92004.

ARCHAEOLOGICAL SYSTEMS MANAGEMENT

Archaeological Systems Management (ASM) maintains collections and reports from the following archaeological sites: SDi 752, SDi 5148, W-389, SDi 4936, and SDi 4571.

CALIFORNIA HISTORICAL SOCIETY

The California Historical Society have in their possession the Historic American Buildings Survey (HABS) files up to 1960 for San Diego County. The various volumes do overlap in subject matter, however, the information contained in each particular volume differs slightly. Xerox copies can be made for the cost of 15¢ per page, plus a research fee for large orders. For photograph orders, payment is required in advance. Laverne Mau Dicker, Curator of Photographs, would be the individual one should address in regards to orders. For surveys postdated 1960, one should contact the Library of Congress in Washington, D.C.

CALIFORNIA STATE ARCHIVES

The California State Archives has no cultural resource collections. In the archival collections, there are numerous historic documents. Copies of Spanish-Mexican land grant expendients; election returns for San Diego County, at the precinct level, for state-wide elections, 1850 to present; articles of incorporation for organizations incorporated in San Diego County since 1850; statistical information on the school districts in San Diego County, 1850s-present; records of military activities; records of highway and road construction, 1912 to present; legislative bills on subjects relating to San Diego County concerns; records relating to public health, social welfare, and relief programs in San Diego County; annual reports and maps of railroad operations in San Diego County; Appellate Court records of trial actions in San Diego County; records of incorporation and annexations of cities and towns; U.S. Census enumerations of San Diego County inhabitants, 1852; and records of California state governmental programs operating in San Diego County are examples of the historic documents which are found in the archival collections.

CALIFORNIA STATE LIBRARY

The California State Library is open to the general public. Some books, periodicals and newspapers are available on interlibrary loan. In the archival collections of the Library, there are some manuscript collections relating to San Diego County. Also contained at the State Library are numerous books, periodicals, and maps relating to San Diego. Newspaper and information files with over 700 references to San Diego County, are housed at the California State Library.

CUPA CULTURAL CENTER, PALA INDIAN RESERVATION

The Cupa Cultural Center contains Cupeno artifacts and documents.

CUYAMACA RANCHO STATE PARK

The Museum there contains exhibits on the history and prehistory of the area. There are also historic maps; interviews; reports (e.g., Bloomquist, 1966, D. L. True's original site report for the Park); and collections of artifacts from San Diego Museum of Man excavations and surveys (conducted primarily by M. Rodgers and M. Farmer).

INTEGRATED PLANNING OFFICE, 1600 Pacific Coast Highway

The historic site inventory maps prepared by the Environmental Development Agency (1973) are on file at this office (Contact: Ron La Rosa).

APPENDIX C (continued)

JAMES COPLEY LIBRARY, SAN DIEGO UNIVERSITY

The James Copley Library contains a general collection of San Diego County and California histories. In addition, it contains a set of Master theses, some of which deal with inland county matters; Mission San Diego records (baptisms 1771-1855; deaths, 1775-1825); and the original schedules of the 1860, 1870 and 1880 censuses.

JULIAN PIONEER MUSEUM, Mable Carlson, Curator

This museum contains a variety of artifacts and documents, including:

> a few Native American artifacts;
>
> Anglo American artifacts (mining equipment, saddles, farming equipment, office equipment);
>
> documents (school and voting records; minutes of the Julian Miners' Association (1880s, 1890s), pioneer sketches (Jasper ca. 1930); Bailey Collection; mining scrapbooks (compiled by O. F. Heckelman); Francis Blanc reminescences; letters; Kelly family scrapbook;
>
> and an extensive collection of photogtraphs.

(The Julian Historical Society has an exhibit of mining equipment at the Washington Mine.)

ESCONDIDO HISTORICAL SOCIETY

Although not extensive, there are a few items in the cultural resource collections belonging to the Escondido Historical Museum. One "twelve ton" bedrock mortar metate, dated 1000-1500 AD: an original Escondido Post Office desk, circa 1890; and a variety of old clothes of the late 19th and early 20th century are housed in the museum. The museum located in Grape Day Park is the original Escondido Library constructed in 1894. The building was restored and moved to Grape Day Park in 1974.

In the archival collections, an extensive collection of materials pertaining to the battle of San Pasqual can be found at the Escondido Historical Museum. The collection stresses eye witness accounts and recollections of contempories. Numerous early Escondido photographs are also lcoated at the Museum. The Escondido Geneological Society has a fine collection of geneological material that is housed in the Museum library.

FIELD MUSEUM OF NATURAL HISTORY

An enormous amount of archaeological materials and ethnographic specimens from California are housed at the Field Museum of Natural History in Chicago. In some cases, the specific Indian tribe or archaeological site is known. In order to go through their catalogues, one should contact Dr. Phillip H. Lewis, Chairman, Department of Anthropology.

J. P. HARRINGTON COLLECTION, NATIONAL ANTHROPOLOGICAL ARCHIVES, SMITHSONIAN INSTITUTION

The National Anthropological Archives contain the rather extensive set of field notes collected by J. P. Harrington. Focusing on linguistics, the ethnographic data contained in Harrington's field notes was collected throughout California and the greater Southwest during the 1930s and 1940s with his wife Carobeth Laird. In addition, John P. Harrington photographed Native Americans and these portraits are also at the Smithsonian. Although the majority of this unpublished material is found in boxes, some attempts at cataloging the material have been made (e.g. the Malki Museum index).

THE HUNTINGTON LIBRARY

Being a research institution with major resources in rare books, manuscripts, and reference works, the Huntington Library is private. Researchers must apply by requesting an application from the Registrar, Reader Services Department. An applicant who is not known at the Huntington should mail two letters of recommendation from two persons of recognized standing, testifying to his or her qualifications as a scholar.

The Huntington's collection of printed material in California history, is an extensive part of its more than 50,000 volumes. In the Library's archival collections are contained manuscripts and photographs which are concerned with the San Diego area. The Manuscripts Department houses the Cave Johnson Couts Collection (approximately 16,000 pieces, 1821-1874) and portions of the Abel Sterns Collection (approximately 12,500 pieces total, 1806-1935). Listed individually under the subject headings of San Diego and San Diego County, there are about 45 other items.

The Library also has approximately 1,000 photographs on San Diego covering the period from 1870 to 1965. Some of the topics include: Old Town San Diego, ranchos, the Exposition, adobes, Pala, and the Coronado Hotel. The Huntington Library has approximately half of the photographs listed in their card file.

LA FORCE COLLECTION

Mr. J. C. LaForce (Sky Mesa Ranch, 787 S. Grade Road, Alpine) owns a collection of early wagons, farm implements and artifacts. The wagons came mostly from San Diego County ranches, including Rancho Santa Margarita (now Camp Pendleton, Agua Hedionda (near Carlsbad) and Cuyamaca. They are all of Anglo American manufacture. Included are Conestoga wagons; Fisher wagons; a metal water tank for watering mules; a lumber wagon; Deere and McCormick reapers--all of them horse- or mule-drawn. The collection is private, but the LaForces have often opened it for public inspection.

LAKESIDE HISTORICAL SOCIETY

The Lakeside Historical Society is a new organization and does not have any collections or cultural resource material relevant to San Diego County at this time.

LOS ANGELES PUBLIC LIBRARY

The Public Library of Los Angeles houses excellent materials on Californian Indians. Located in the California Room, microfilms contain a large collection of pertinent material. County and city histories, accounts of early Pacific voyages, original narratives of the Spanish and Mexican periods, journals and diaries of the early American period, several outstanding photographic collections, and maps are included in the catalogued items belonging to the History Department. Important for the study area, the 1902 U. S. Government Report of the Warner's Ranch Indian Advisory Commission and miscellaneous Californian manuscripts from 1817 to 1900 are also found in the Public Library.

THE ROBERT H. LOWIE MUSEUM OF ANTHROPOLOGY

The Lowie Meseum has one of the most significant collection of artifacts pertaining to California Indians. There are at least 270 Cahuilla items, 107 Diegueno items, and 61 Luiseno items included in the ethnographic collection, which as been said to be the biggest west of the Mississippi River. Also contained in the Museum are many still photographs, in negative, print or slide form. Half inch magnetic tape recordings of songs and other information concerning San Diego County Indians can also be found in the Lowie Museum. Two days prior notice has been requested for visitation.

MALKI MUSEUM, MORONGO INDIAN RESERVATION

The Malki Museum located at the Morongo Indian Reservation contains Cahuilla artifacts and documents. Cupeno archival documents are also housed at the Museum.

MUSEUM OF THE AMERICAN INDIAN, HEYE FOUNDATION

During the 1920s, the Heye Foundation supported research done in southern California. As a result, the Museum contains about 200 pieces from San Diego County in their archaeological collections. Focusing mainly on the Diegueno and Luiseno, there are about 500 pieces in the ethnographic collections including pottery basketry, tools and utensils, clothing and some ethnobotany.

In their archival collections there are approximately 300 photographs. The subject matter of these photographs are mainly the Diegueno, Luiseno, Cahuilla and Mission Indians. There are also photographs of artifacts contained in the collection. An unpublished manuscript by Constance DuBois on Diegueno and Luiseno is also property of the Museum of the American Indian and can be found in the archival collections.

The collections are available for research on application to the appropriate staff member. They are: artifacts - Dr. James Smith, Curator of North American Ethnology; written material - Mrs. Mary Davis, Librarian; and photographs - Mr. Carmelo Guadagno, Curator of Photography. Application must be made in advance and a summary of the project should be included.

ORAL HISTORY ASSOCIATION

A class in oral history has been conducted by Mr. Shannon at Grossmont College. The interviews that were done during this class have been transcribed and are on file at the Instructional Media Center. Of interest to BLM are interviews with:

- Harry J. Phillips (TCX-4000), who worked at the Julian area mines.
- George A. Cameron, a descendant of the pioneer settlers of Cameron Valley.
- Mrs. Leona Ransom, who is an old time Ramona resident.

PACIFIC SOUTHWEST RAILWAY MUSEUM ASSOCIATION LIBRARY, INC.

Included in the historical collections at the Pacific Southwest Railway Museum Library, Inc., are various pieces of railroad equipment, rolling stock, some parts and other railway supplies. A collection of books, timetables, news clippings, pamphlets, notes and photographs pertaining to the railroads of San Diego County are contained in the Museum. Members of the Library and of the railway museum organization have individual collections of assorted documents, notes, timetables, models, railroad equipment (i.e., National City and Otay Rly, coach body, San Diego horse car body, etc.), maps, slides, some technical data, etc. Access to the collection is by appointment by either contacting Eric Sanders in La Mesa or Chalmers Kerr in San Diego.

RAMONA PIONEER HISTORICAL SOCIETY

The Ramona Pioneer Historical Society has a collection of artifacts and photographs pertinent to the study area. Also contained at the Historical Society is a tape library of interviews with long-time residents; and autobiographies of these same individuals.

SAN DIEGO COUNTY

There are a great number of useful county records on file in various county offices (see Coy (1919) for an inventory). Of particular interest are the land patents and deeds and mining records at the Recorder's Office; the Board of Supervisors' records at the Civic Center; and the plat and patent maps at the Department of Transportation, County Operations Center.

SAN DIEGO COUNTY LAW LIBRARY

Pioneer Room

The Pioneer Room contains a small collection of works related to the history of San Diego County. Of particular interest is the legal history of Warner's Ranch (Union Title and Trust Company, ca. 1904); a report on the Indian Reservations (San Diego County, ca. 1932); and Lummis (1902c).

THE SAN DIEGO MUSEUM OF MAN

The San Diego Museum of Man, located in Balboa Park, houses the largest collection of southern California Indian Material. Its collection of ethnographic artifacts includes items from the Cupeno, Diegueno and Kumeyaay (the best collection of these groups in the country), Cahuilla (including baskets) and Luiseno. The Museum's extremely extensive archaeological holdings include an enormous collection of Diegueno items, a huge Kumeyaay collection, a Luiseno collection which is complementary to the ethnographic collection. There is also an extensive collection of items from the San Dieguito, La Jolla and Amargosa cultures which predate the cultures found at contact. Much of this material was collected by Malcolm Rogers.

The Curatorial Department of the Museum has a collection of archaeological site records and other manuscripts pertaining to California Indians, maps and a photographic collection which includes two volumes of photographs taken by Constance Goddard DuBois between 1897 and 1907. Twenty three cylinder records and tape transcriptions of Diegueno and Luiseno songs that were recorded by Constance Goddard DuBois and/or Edward Davis between 1906 and 1911 are also housed at the Museum.

A type bibliography of the above archival materials may be obtained from Ken Hedges, Curator of the Museum, on an individual request, cost basis.

SAN DIEGO PUBLIC LIBRARY

California Room

The California Room contains an excellent collection of published and unpublished works on California history in general and San Diego County in particular. Its collection is similar to that at the San Diego Historical Society Library at Serra Museum.

The California Room in the San Diego Public Library, houses Charles Hatfield's barometer, rain gauge and scales. In the archival collections of the Public Library, one can find an archival map of dam and reservoir site on Sweetwater River and material used in the court case of City of San Diego vs. Cuyamaca Water Co.; and Tax Assessment Rolls for San Diego County (1850, 1855-7, 1860-1, 1862). In the form of manuscripts, material on San Diego and Arizona Eastern Railway are found in the archival collections. A manuscript on Los Penasquitos Rancho, Kelly papers (a North County pioneer family) and feature histories of various dams (i.e., Sweetwater, Lower Otay, El Capitan, Barrett, Morena, San Dieguito project at Sutherland) are also a part of the archival collections. The California Room also possesses a copy of Hunzicker's notes on local place names. Numerous photographs are contained at the Public Library on various topics such as ranchos, Native Americans, and county towns.

Newspaper Room

The Newspaper Room microfilm collection contains the San Diego Herald, 1851-1860; the San Diego Union, 1868-present; the San Diego Tribune, 1895-present; the San Diego Daily Journal, 1944-1950; and the San Diego Sun, 1881-1939. A unique feature of the Newspaper Room is the index to the San Diego Herald and San Diego Union (1868-1903; 1903-present). This is a subject index consisting of more than 750,000 cards.

The Newspaper and California Rooms are administered as a unit under the History Section. Material is for reference use only; duplicate circulating copies are often available in other sections.

SAN DIEGO HISTORICAL SOCIETY

Serra Museum and Library (Sylvia Arden, Head Librarian, Larry Booth, Curator/Photo Archivist)

Located in Presidio Park, the Serra Museum and Library houses an important collection of published and unpublished materials both on historic and prehistoric topics. This is perhaps the best single collection on San Diego County history. The collection includes 32 reels of microfilm from the Archivo General of Mexico City, 1769-1840, as well as a great number of other documents (Tax Assessment Rolls, Cooke (1849), Wrightington (1878), etc.).

The Library has a collection of 400 typescript and tape recorded interviews with early county settlers (Oral History Project) and a collection of 374 notebooks containing much crimary biographical material on early residents (Biographical File). It also has the San Diego Herald (1851-1860) on microfilm, as well as a "Vertical File" on various selected topics.

The Serra Museum and Archives has a major collection of California Indian artifacts pertaining particularly to the Mission Indians and their ancestors; 8,000 photographs of early San Diego, including several of Native Americans; and a large collection of artifacts, including tools, ore buckets, a clover cutter, a hay cutter, ox bows, a McCormick-Deering reaper, a plowing disc, portions of an arrastra and early stamp mill from Noble Canyon.

SAN DIEGO STATE UNIVERSITY LIBRARY

Special collections, Mr. Gordon Samples, Head of Special Collections

The special collections at the San Diego State University Library, contains little material on San Diego County History.

San Diego History Research Center, Dr. Stephen Colston, Director

The Center's collections primarily concern urban twentieth century history. However, the Center does have certain collections relevant to inland county history, namely:

Apellate Court Briefs, 1890-ca. 1935;

San Diego-Imperial Counties Labor Council records, 1917-1976

Socialist Party minute book, 1913-1916 (Dehesa, Alpine)

Interviews with local residents (including granite stone workers and Dieguenos)

General Library

The General Library contains a good collection of works on County history, including Southern California Rancher, City and County Directories and several valuable theses (i.e., Carlton, 1977; Gordinier, 1966; and Rustvold, 1968).

SANTA BARBARA MISSION ARCHIVES, Fr. Francis Guest, Archivist

This is an outstanding repository of mission records. It contains original documents as well as copies of documents at other libraries. References to Jamul, Santa Ysabel and Pala occur in numerous documents. Holdings are listed in Geiger (1947).

SOUTHWEST MUSEUM

The Southwest Museum has a large collection of California Indian art and artifacts. Included in this collection are Luiseno artifacts. The Museum also houses an extensive photographic collection. Pertinent to the study area are Charles F. Lummis' notes on the Sequoyah League which are contained in the Museum manuscript collections. Located in Los Angeles, the Museum is open to the public.

TITLE INSURANCE AND TRUST COMPANY, 220 A Street; Jane Booth, Archivist

Historical Collection

This company possesses the best collection of San Diego County historical photographs. More than 140,000 negatives are on file here (not all of them reproduceable). There is no charge for inspecting photographs, but an 8x10 print costs $9.68. A list of selected photographs has been prepared (See Appendix K).

UNITED STATES DEPARTMENT OF THE INTERIOR

The United States Department of the Interior Museum does not have on record any artifacts or documentation for San Diego County, California.

UNIVERSITY OF CALIFORNIA, LOS ANGELES

Containing well over a million catalogued artifacts, the Department of Anthropology's 400 collections represent approximately 1,000 different sites which include San Diego County archaeological loci. The records and collections may be used by professional anthropologists at the museum. Arrangements should be made with the Department in advance, preferably by mail.

The UCLA Archaeological Survey is a facility concerned with the collection and analysis of archaeological material. Concentrating in research and training, the survey issues serial publications including the UCLA Archaeological Survey Annual. Its "Annotated Index to the UCLA Archaeological Survey Annual Report", lists its publications and describes them.

The University Library, Department of Special Collections, University Research Library (90024) contains manuscripts whose topics are concerned with California Indians. Included in the Library's collection are 80 percent of the 4,700 listed entries found in Cowan's Bibliography of the History of California, 1510-1930 (as well as many titles not contained in biographies of California and materials in the George Pidgeon Clements collections. Numerous documents and materials encompassing subjects such as Indian sub-agent negotiations; Indian legends; and Indian claims cases can be found in the library.

There are other Department Libraries, which contain pertinent materials for the San Diego County area (i.e. the Public Affairs Service, University Research Library; the Museum of Cultural History; and the School of Law Library). Collections, periodicals, papers and briefs of cases taken to court by Californian Indians are found within these Libraries.

UNIVERSITY OF CALIFORNIA, RIVERSIDE

The Archaeological Research Unit (ARU) located at the University of California in Riverside possesses no artifact collections or other materials pertaining to San Diego County. They do have several manuscripts on file at their office and are available on request at no charge other than copying costs. The manuscripts which are a part of their archival collections are listed below:

1. Weide, Margaret L., and James P. Barker
   Background to Prehistory of the Yuha Desert Region (ARU #112). Prepared for the USDI, Bureau of Land Management Riverside, June, 1974.

2. Holcomb, Thomas, and Carol Rector
   Environmental Impact Evaluation: Rainbow Municiple Water District, Annexation No. 3 (ARU #147). Prepared for Albert A. Webb Associates, Consulting Engineers, Riverside, August, 1975.

3. Bell, Daniel A.
   An Archaeological Survey for the Proposed Development of Mason Valley Ranch, Mason Valley, California (ARU #151). Report prepared for Hirsch & Koptionak Consulting Engineers and Planners, San Diego, August, 1975.

APPENDIX C (continued)

4. Daly, Kenneth
   Environmental Impact Evaluation: Archaeological Survey of a Portion of the San Luis Rey River Valley near Bonsall, San Diego County, California (ARU #202). Prepared for Albert A. Webb Associates, Consulting Engineers, Riverside, June, 1976.

5. Weaver, Richard A.
   Sundesert Nuclear Project - Archaeological Inventory and Assessment of Two Alternative Corridor Segments (Alignments 43 and 44) in the In-Ko-Pah Gorge Area, Imperial and San Diego Counties, California (ARU #205). Report prepared for USDI, Bureau of Land Management, Denver, Colorado, January, 1977.

6. Weaver, Richard A.
   Cultural Resource Identification - Sundesert Nuclear Project (ARU #208). Prepared for USDI, Bureau of Land Management, Denver, Colorado, January, 1977.

7. Leonard, N. Nelson
   Cursory Archaeological Evaluation of the Borrego Springs Park Development, Borrego Springs, California (ARU #226). Report prepared for Albert A. Webb Associates, Consulting Engineers, Riverside, March, 1977.

UNIVERSITY OF CALIFORNIA, SAN DIEGO

Special Collections

The Special Collections contains a good selection of published and unpublished works on California history. Its best collections are on early Pacific explorations and Baja California. Of more direct relevance to inland San Diego County are the business records of the San Diego, Arizona and Eastern Railway Company, O'Bannon (1977), Rivera y Moncada (1967) and several County Reports (i.e., San Diego County Planning Commission 1937, 1938).

APPENDIX D

ETHNOBOTANICAL REFERENCES

This appendix has been compiled from a review of available literature. References are indicated at the end of each plant description. The scientific name is given according to Munz (1974).

KEY

Scientific Name (according to Munz, 1974)
  a) The common name(s)
  b) The distribution according to Munz
  c) Which parts of the plants were used
  d) When the plant is available (peak time)
  e) How the plant was prepared for eating
  f) Additional notes
  g) References

  - means the information could not be located

Plant Communities	(abbreviations)
Coastal Strand	
Coastal Salt Marsh	
Freshwater Marsh	
Coastal Sage Scrub	(C.S.S.)
Chaparral	
Valley Grassland	(V. Grassland)
Southern Oak Woodland	(S. Oak Wd.)
Montane Coniferous Forest	
Bristle-cone Pine Forest	
Sagebrush Scrub	
Shadscale Scrub	
Pinyon-Juniper Woodland	(P.-J. Wd.)
Joshua Tree Woodland	(J.-T. Wd.)
Creosote Bush Scrub	(C.B.S.)
Alkali Sink	

APPENDIX D

Acacia greggii Gray.
- a) Catclaw
- b) Common in washes and canyons below 6,000 feet. Rocky hillsides, (Jagger). Creosote bush scrub to P-J. woodland Colorado - S. Mojave deserts.
- c) Flowers (?) Pods
- d) April - June, May - August
- e) Pods eaten fresh of dried and ground into flour from which mush or cakes were made.
- f) "outstanding construction material and a fine firewood" (Bean & Saubel, p. 29).
- g) Bean & Saubel (1972:29) (Cahuilla), Barrows 1900:60 (Luiseno-San Felipe Valley).

Acer macrophyllum Pursh.
- a) Big-leaf Maple
- b) Stream banks and canyons below 5,000 ft.; most of Cismontang Calif. except valley plains.
- c) Limbs
- d) -
- e) -
- f) Limbs used for house construction and as firewood.
- g) Bean & Saubel 1972:29 (Cahuilla).

Adenostoma fasiculatum H&A.
- a) Chamise
- b) Common dominant on dry slopes and ridges below 5,000 ft. Chaparral.
- c) Leaves, branches
- d) -
- e) -
- f) Branches used for construction of houses and ramadas, firewood, and arrow shafts. Scale insect gum used as adhesive. Used for granary construction - drink given to sick cows (Barrows).
- g) Bean & Saubel 1972:29-30 (Cahuilla)
  Sparkman 1903:205,211, 232 (Luiseno)
  Barrows 1900:36, 79 (Cahuilla)
  Hinton 1975:217 (La Huerta Diegueno)
  Kroeben 1925:650 (Luiseno)

Adenostoma sparsifolium Torr.
- a) Red shank, Ribbonwood
- b) Dry slopes and mesas below 6,000 ft., chaparral.
- c) Seeds, bark/limbs, leaves
- d) August - September, (Munz)*
- e) Seeds eaten
- f) Bark used for women's skirts, limas make good firewood, leaves used to make a beverage for colds, chest ailments, stomach ailments. Ground leaves mixed with grease to make a salve for sores. Limbs used to make arrow shafts. Tea used for colic and toothache (La Huerta)
- g) Bean & Saubel 1972:30-31 (Cahuilla)
  Barrows 1900:50, 77 (Cahuilla)
  Hinton 1975:217 (La Huerta Diegueno)

Agave deserti Engelman (A. Consociata Trel.)
- a) Agave, century plant, desert agave
- b) Washes and dry rocky slopes below 5,000 ft.; C.B.S. shadscale scrub. W. edge of Colorado desert to providence, old dad, granite and whipple mts. Gachering areas "owned" by lineages (B & S, p. 32)
- c) Flowers, leaves, basal rossette (Flowering stalk)
- d) April - July, August, Best Nov. - May. April - August.
- e) Flowers parboiled, then eaten or dried leaves baked, then eaten or dried and stored stalk roasted, pounded into cakes, stored in pots.
- f) Fiber from leaves made into: nets, slings, shoes, skirts, bowstrings, mats, brushes, snares, baby cradles, sandels. Leaf used as foundation making baskets, and needle and thread. Thorns used as awl. Ashes used as dye for tatoos. Fishing line made from fibre (Curtis).
- g) Bean & Saubel, 1972:31-36 (Cahuilla)
  Merrill, 1923:235.
  Barrows, 1900:47, 58-59, 66, 54, 49 (Cahuilla)
  Jaeger 1941:22
  Balls:17-20
  Almstedt 1968:10, 11 (Diegueno)
  Hedges 1966:44-45 (Diegueno)
  Curtis 1926:9 (Luiseno) 23, 29, 25 (Cahuilla) 42, 43, 44 (Diegueno)
  Kroeber 1925:721-2 (Diegueno)

Allenrolfea occidentalis (Wats.) Kuntze
- a) Iodine bush
- b) Moist alkali places; alkali sink; deserts to Central California.
- c) Seeds
- d) July - Oct.
- e) Seeds ground into flour; beverage, mush, cookies.
- f) -
- g) Bean & Saubel 1962:36 (Cahuilla)

Allium spp.
- a) Wild onion
- b) Most plant communities
- c) Bulbs
- d) April - July
- e) Bulbs eaten or used as flavoring
- f) -
- g) Bean & Saubel 1972:37 (Cahuilla)

Amaranthus fimbriatus (Torr.) Benth.
- a) Amaranth
- b) Occ., dry gravelly placed below 5,000 ft.; C.B.S., J.T.Wd., etc. both deserts.
- c) Seeds, leaves
- d) Sept - Oct., Aug. - Nove.
- e) Leaves boiled and eaten as greens. Seeds parched, ground and made into a mush.
- f) -
- g) Bean & Saubel 1972:37 (Cahuilla)

Ambrosia psilostachya Dc.
- a) Western ragweed
- b) Disturbed placed below 2500 ft.; C.S.S., chaparral; etc. cismontane and in Colorado desert.
- c) Leaves
- d) -
- f) Tea made from leaves for stomach pain.
- g) Hinton 1975:219 (La Huerta Diegueno)

Amelanchier pallida Greene.
- a) Service - berry
- b) Dry slopes below 11,000 ft.; montane coniferous forest
- c) Berries
- d) June - Aug.
- e) Fresh berries eaten, or dried
- f) -
- g) Bean & Saubel 1972:38 (Cahuilla)

Anemopsis californica Hook.
- a) Yerba mansa
- b) Wet places below 6500 ft. most plant communities.
- c) Seeds
- d) ?
- e) Seeds ground and used in mush or bread (kamia)
- f) Roots boiled into decoction used to cure pleurisy, stomach ulcers, chest congestion and colds. Bark? gathered in fall and boiled for washing sores. Powder of leaves used on sores.
- g) Bean & Saubel 1972:38 (Cahuilla)
  Barrow 1900:78 (Cahuilla)
  Balls 1962:64-65
  Sparkman 1908:233 (Luiseno)
  Hedges 1966:17 (Diegueno)
  Gifford 1931:24.

Apiastrum angustifolium Nutt.
- a) Wild celery
- b) Common on dry sandy valleys and slopes below 3000 ft. C.S.S.; chaparral; etc.; cismontane.
- c) Greens
- d) Feb. - April
- e) Fresh greens (boiled, according to Sparkman)
- f) -
- g) Bean & Saubel 1972:39 (Cahuilla)
  Sparkman 1908:196 (Luiseno)

Apocynum cannabinum L. var. glaberrimum A.DC.
a) Indian - hemp
b) Occ. in damp places below 6000 ft. many plant communities.
c) Fibers from stem
d) -
e) -
f) Fibers used for twine and nets. Apocynum sp. used for women's apron (Luiseno) and bowstrings (Crutis, Kroeber)
g) Bean & Saubel 1972:39-40 (Cahuilla)
Palmer 1878:649
Balls 1962:57-58
Sparkman 1908: 201, 202, 206, 230 (Luiseno)
Curtis 1926: 9, 10, 159 (Luiseno) 44 (Diegueno)
Kroeber 1925:652

Arbutus menziesii Pursh.
a) Madrone, Madrono
b) Wooded slopes and canyons below 5,000 ft. S. Oak Wd.; etc.
c) Leaves, bark
d) -
e) -
f) Leaves used to make medicine for stomach ailments. Leaves and bark used to make lotion for sores and cuts.
g) Bean & Saubel 1972:40 (Cahuilla)
Balls 1962:69 (Cahuilla)
h) Balls (1962) says berries eaten fresh or dried and cooked as needed.

Arctostaphylos spp. Adans.
a) Manzanita
b) Generally occurs on dry slopes below 7500 ft., one species up to 9000 ft.; chaparral; yellow pine forest, (see Munz for further details)
c) Fruits, seeds, leaves.
d) June - September
e) Berries mashed or soaked in water to make a drink. Eaten fresh or dried and ground into flour for mush. Seeds were ground and used for cakes or mush. Leaves soaked in water to make tea used in curing diarrhea or poison oak rash.
f) A preferred firewood, branches used in house construction. Awl handles, pipes, and small tools made from wood.
g) Bean & Saubel 1972:40-41 (Cahuilla)
Balls 1965:38-39 (Calif.)
Sparkman 1908:230 (Luiseno)
Barrows 1900:36, 64 (Cahuilla)
Almstedt 1968:10 (Diegueno)
Hinton 1975: 219 (La Huerta Diegueno)
Curtis 1926:43 (Diegueno) :8 (Luiseno)

Artemesia californica Less.

a) Coastal or California sagebrush
b) Lower slopes and fans below 2500 ft.; coastal sage scrub, coastal strand; cismontane
c) -
d) -
e) Tea made from boiled plant. Given at the onset of menstruation, and before each menstrual period. Given to newborn babies to "flush out" their system. Leaves were chewed or dried and smoked to relieve colds. Smoke believed to be purifying for hunters (Luiseno).
f) -
g) Bean & Saubel 1972:42 (Cahuilla)
Sparkman 1908:199 (Luiseno)
Gifford 1918:219 (Luiseno)

Artemisia douglasiana Bess.

a) Sagebrush
b) Waste places up to 6000 ft.; many communities cismontane to desert edge.
c) Stalks
d) -
e) -
f) Arrows made from stems
g) Kroeber 1925:650
Bean & Saubel 1972:42-43 (Cahuilla)

Artemisia dranunculus L.

a) None
b) Dry ± disturbed places up to 11,000 ft.; from c.s.s. to coniferous forest; J. T. wd. and above.
c) Seeds
d) Sept. - Dec. ? (Munz)
e) Seeds used for food
f) Plant used medicinally
g) Sparkman 1908:228 (Luiseno)

Artemisia ludoviciana Nutt.

a) Sagebrush, wormwood
b) Day open places or slopes, below 8000 ft.; C.B.S.; P - J wd.; sagebrush scrub; forests, J.T. wd.
c) Stems
d) -
e) -
f) Used for arrow shafts, basketry. Roofing material, granaries
g) Bean & Saubel 1972:42-43 (Cahuilla)
Barrows 1900: 28, 50, 52 (Cahuilla)
Kroeber 1925:704
Curtis 1926:22, 26 (Cahuilla)
Merrill 1903:236 (Cahuilla)

Artemisia tridentata Nutt.
- a) Great basin sagebrush
- b) Dry slopes and plains 1 - 10,600 ft.; sagebrush scrub, yellow pine f., chaparral; P - J wd., etc.
- c) Seeds
  Leaves
  Stems
- d) August - October
- e) Seeds parched and ground into flour for mush.
- f) Leaves made into medicinal tea for stomach complaints. Stems and leaves burned to purify the air. Shoots used in house construction. Tea used for coughs & bronchitis.
- g) Bean & Saubel 1972:43 (Cahuilla)
  Barrow 1900:65,78 (Cahuilla)
  Hinton 1975:220 CLA Huerta Diegueno)

Asclepias L. spp.
- a) Milkweed
- b) Many plant communities below 7,000 ft.
- c) Greens (?)
  Seeds (?)
  Stems
  Sap
- d) May - June (?)
  July (?)
  -
  -
- e) Leaves of one sp. may have been boiled and eaten for greens. Seeds ground into flour. (Cahuilla)
- f) Sap used to make chewing gum, and for relief of pain from insect bites. Stems used to produce fiber for nets, slings and snares. Sap produces adhesive gum. Woman's apron made of fiber (Luiseno). Bowstrings (Curtis).
- g) Bean & Saubel 1972: 43-44 (Cahuilla)
  Barrows 1900:75,48 (Cahuilla)
  Balls 1962:78-80,75
  Sparkman 1908:230,201,202 (Luiseno)
  Curtis 1926:7,9,10,159 (Luiseno) 44 (Diegueno)
  Kroeber 1925:722 (Diegueno)

Astragalus sp. L.
- a) Locoweed
- b) Generally sandy or gravelly places in many plant communities - 27 spp.
- c) Pods
- d) -
- e) -
- f) Pods ground and used as a spice
- g) Bean & Saubel 1972:44 (Cahuilla)
  Barrows 1900:66-67 (Cahuilla)

Atriplex californica
a) Saltbush
b) Sea bluffs and sandy coast; coastal strand; edge of coastal salt marsh;C.S.S., etc.
c) Seeds
d) ?
e) Seeds parched and ground for much or bread.
f) Roots used as soap.
g) Balls 1962:74-75 (Calif.)

Atriplex lentiformis (Torr.) Wats.
a) Saltbush
b) Alkaline places mostly below 2,000 ft. alkali sink; deserts.
c) Seeds
Leaves
d) July to September
e) Seeds poached, ground into flour, and made into much and small cakes.
f) Leaves used as soap. Flowers, leaves and stems crushed, steamed and inhaled for relief of nasal congestion. Fresh leaves chewed, and dried leaves smoked for relief of head colds.
g) Bean & Saubel 1972: 45 (Cahuilla)
Barrows 1900:65 (Cahuilla)

Baccharis douglasii DC
a) -
b) Moist places near streams, below 2,500 ft., coastal salt marsh, C.S.S., etc., & San Diego Co. to the north and along coast.
c) Leaves
Wood
d) -
e) -
f) Decoction of leaves used to bathe sores and wounds. Wood used for drilling fire.
g) Sparkman 1908:209, 228 (Luiseno)

Baccharis glutinosa Pers.
a) Mule fat
b) Along watercourses below 3,500 ft.; C.S.S.; chaparral, etc.
c) Whole plant
d) -
e) -
f) Leaves steeped and used as eyewash and a preventative of baldness. Leaves and stems boiled into decoction used for female hygiene. Limbs and branches used in house construction. Leaves cooked and applied to bruise, wound, or sting (La Huerta)
g) Bean & Saubel 1972: 46 (Cahuilla)
Barrows 1900:78 (Cahuilla)
Hinton 1975:220 (La Huerta Diegueno)

Beloperone californica Bentham
- a) Chuparosa
- b) Common in sandy places along water courses below 2,500 ft.; C.B.S.; W & N edges of Colorado deserts.
- c) Flowers
- d) March - June, later.
- e) Flowers sucked for nectar.
- f) -
- g) Bean & Saubel 1972:47 (Cahuilla)

Bloomeria crocea (Torr.) Cov
- a) Golden stars
- b) Dry flats and slopes up to 5,000 ft.; C.S.S., Chaparral, V. Grassland; S. oak wd.:
- c) Corn
- d) Year round (early spring)
- e) Corn eaten raw
- f) -
- g) Bean & Saubel 1972:47 (Cahuilla)

Brickellia californica (T & G) Gray
- a) -
- b) Washes and dry slopes below 8,000 ft.; C.S.S.; chaparral; cismontane and oce on deserts (C.B.S. P-J wd.)
- c) Leaves
- d) -
- e) -
- f) Tea made from leaves, used to combat fever.
- g) Hinton 1975:220 (La Huerta Diegueno)

Brodiaea sm. spp.
- a) Brodiaea
- b) 5 spp. growing below 5,000 ft., C.S.S., chaparral; v. grassland; foothill wd., yellow pine f.
- c) Corms
- d) EGB - July (depending on elevation)
- e) Corms eaten raw or boiled
- f) -
- g) Bean & Saubel 1972:47-48 (Cahuilla)
  Sparkman 1908:234 (Luiseno)
  Curtis 1926:8

Bursera microphylla Gray
- a) Elephant tree
- b) Rocky places; C.B.S.
- c) Sap
- d) -
- e) -
- f) Sap used as a cure for skin diseases.
- g) Bean & Saubel 1972:48 (Cahuilla)

Calandrinia ciliata (R&P) DC. var. Menziesii (Hook) Macbr.
a) Red maids [C. caulescens]
b) Open grassy places and cult. fields below 6,000 ft. cismontane Calif. to desert edge.
c) Plant
Seeds
d) Jan. - March (variable)
Mar - June (variable)
e) Used for greens when tender. Seeds also used for food.
f) -
g) Sparkman 1908:232 (Luiseno)

Calocedrus decurrens (Torr) florin.
a) insense cedar
b) Mtn. slopes & canyons 4,500 - 8,200 ft.; yellow pine forest;
c) Bark
d) -
e) -
f) Cedar slabs used for house construction
g) Bean & Saubel 1972:35-36 (Cahuilla)

Calochortus pursh. spp.
a) Mariposa lily
b) 17 spp. in S. Calif. Chaparral, forests below 9,000 ft., C.S.S.; V. Grassland; S. Oak Wd.; Foothill Wd.; C.B.S.; J.-T. Wd; P.-J. Wd.
c) Bulbs
d) April - August (depending on sp. & elevation)
e) Bulbs eaten raw or baked in a pit.
f) -
g) Bean & Saubel 1972:50 (Cahuilla)
Sparkman 1908:195 (Luiseno)
Munz 197 :921 ("Indians")
Curtis 1926:8

Camissonia claviformis (Torr. & Frem) Raven
a) Desert primrose
b) Sandy plains and washes below 4,000 ft. C.B.S.; J.-T. wd.
c) Plant
d) March - May
e) Plant used as greens. Also host to caterpillar of the white line sphinx moth.
f) -
g) Bean & Saubel 1972:94 (Cahuilla)

Carpobrotus aequilaterus (Haw) N.E. brown
a) Sea - fig. [mesemoryanthemum A.]
b) Sand dunes and bluffs along the coast. Coastal strand; C.S.S.
c) Fruit
d) June - Oct (Munz) ?
e) Fruit eaten
f) -
g) Sparkman 1908:232 (Luiseno)

Castilleja foliolosa H & A.

a) Paint brush
b) Open rocky places below 5,000 ft.; C.S.S.; chaparral.
c) Flowers
d) March - June
e) Flowers sucked for nectar.
f) -
g) Bean & Saubel 1972:51 (Cahuilla)

Ceanothus L. spp.

a) California lilac
b) Dry slopes; chaparral; S. oak wd.; yellow pine forest; P.-J. wd.; C.S.S.
c) Leaves, berries, limbs
d) -
e) -
f) Firewood. Leaves used to treat poison oak. (Diegueno) Berries used for itches or sores, after being boiled. (Diegueno)
g) Bean & Saubel 1972:51 (Cahuilla)
Hedges 1966:39 (Diegueno)

Centaurium venustum (Gray) Rob.

a) Canchalagua, centaury
b) Dry slopes and flats below 2,500 ft.; C.S.S. chapparal.
c) -
d) -
e) -
f) Tea made from plant used to reduce fever
g) Bean & Saubel 1972:51 (Cahuilla)
Palmer 1878:652
Sparkman 1908:230. (Luiseno)

Cercidium floridum Bentham

a) Palo verde
b) Washes and low sandy places below 1,600 ft.; C.B.S. Colorado desert.
c) Beans
d) July - August
e) Beans dried, ground in mortars, used in mush or cakes.
f) -
g) Bean & Saubel 1972:52 (Cahuilla)
Barrows 1900:60 (Cahuilla)

Chaenactis glabriuscula DC.

a) Pin cushion
b) 6 var. growing in sandy places and soils below 6,500 ft.; v. grassland, chaparral, C.S.S., S. oak wd.
c) Seeds
d) June - August (possibly earlier nr. coast)
e) Seeds parched, ground into flour, and mixed with other seeds to form a mush.
f) -
g) Bean & Saubel 1972:52 (Cahuilla)

Chaetopappa aurea (Nutt.) Keck.
a) None
b) Dry open places below 6,000 ft.; valley grassland C.S.S.; to yellow pine forest.
c) Pollens
d) -
e) -
f) Pollen used as cosmetic for women.
g) Bean & Saubel 1972:52 (Cahuilla)

Chenopodium L. spp.
a) Goosefoot, pigweed
b) Many plant communities. 14 spp.
c) Greens
Seeds
Roots
d) Spring
April - Oct. ?
Year-round
e) Shoots and leaves boiled and eaten as greens. Seeds parched and ground into flour.
f) Root grated and used as soap.* Chewing gum made from sap. Antihelmenthic also made from sap.
g) Bean & Saubel 1972:52-53. (Cahuilla)
Sparkman 1908:196,233,210 (Luiseno)
Barrows 1900:48,57 (Cahuilla)
Hedges 1966:23 (Diegueno)
Curtis 1926:8 (Luiseno)
*C. californicum

Chilopsis linearis (Cav.) Sweet
a) Desert willow
b) Along washes and waterways below 5,000 ft. C.B.S.: J.T. wd.; chaparral in San Jacinto v. East.
c) Pods
d) July - Oct.
e) Pods eaten in a manner similar to mesquite?
f) Wood highly prized for house frames, granaries, olla holders. Used for bows. Bark provided a fibrous material used for making nets, shirts, breechclouts.
g) Bean & Saubel 1972:53-54. (Cahuilla)

Chlorogalum parviflorum Wats.
a) Soap plant
b) Dry open places below 2,000 ft.; c.s.s.; v. grass.
c) Bulb
d) Mar - May (?)
e) Bulb eaten
f) -
g) Sparkman 1908:234. (Luiseno)

Chlorogalum pomeridianum (D.C.) Kunth.

a) Soap plant, amole
b) Dry open hills and plains below 5,000 ft. - c.s.s.; v. grassland.
c) Bulbs
d) Year round?
e) Beans roasted and eaten. (Cahuilla)
f) Fibers around bulb used to produce cleaning brush. Bulb - crushed & rubbed in water to produce soap lather. May have been used as stupefying agent for fish.
g) Bean & Saubel 1972:54 (Cahuilla)
Balls 1962:71-73.
Sparkman 1908:203, 210, 234. (Luiseno)
Barrows 1900:48, 54 (Cahuilla)
Munz 1974:926

Chrysothamnus nauseosus ssp. Hololeucus (Gray) H.&C.

a) Rabbit brush
b) Sandy high desert; 3,000 - 9,000 ft.; alkali sink; sagebrush scrub; P.-J. wd.
c) Twigs
d) -
e) -
f) Tea made from twigs for relief from chest pains and coughs.
g) Bean & Saubel 1972:54 (Cahuilla)
Barrows 1900:79 (Cahuilla)

Circium congdonii Moore & Franklin

a) Thistle
b) Meadows and damp places 5,000 - 10,000 ft. yellow pine forest.
c) Bud at base of thistle.
d) June - August (?)
e) Unknown
f) -
g) Bean & Saubel 1972:55 (Cahuilla)

Claytonia perfoliata Donn. var Perfoliata

a) Miner's lettuce, Indian lettuce [Montia p.]
b) Shaded & moist places below 5,000 ft.; c.s.s.; chaparral, s.o.wd. to desert edge.
c) Plant
d) Jan - May?
Picked before flowering.
e) Eaten fresh or boiled for greens.
f) -
g) Bean & Saubel 1972:89 (Cahuilla)
Sparkman 1908: 232, 196 (Luiseno)
Hedges 1966:21 (Diegueno)

Cneoridum dumosum (Nutt) Hooker
a) Bushrue
b) Mesas and bluffs below 2,500 ft. Chaparral, c.s.s.; orange & S.D. Co. S.
c) ?
d) ?
e) -
f) Used for medicine
g) Sparkman 1908:231 (Luiseno)

Condaliopsis parryi (Torr.) Suesseng.
a) Crucillo
b) Dry slopes and in canyons 1,200 - 3,500 ft. J.T. wd., P - J wd., upper C.B.S. Colorado desert.
c) Berries
d) March - May
e) Fruits eaten fresh or dried and ground into flour for mush. Nutlet ground and leached for flour.
f) -
g) Bean & Saubel 1972:56 (Cahuilla)

Cordylanthus spp. Nutt.
a) Bird's-beak
b) 12 spp. occurring in several communities.
c) Part not specified
d) ?
e) -
f) Used as emetic
g) Sparkman 1908:229. (Luiseno)

Croton californicus Muell-arg.
a) Croton
b) Dry, sandy places below 4,000 ft.; c.s.s.; chaparral
c) Leaves & stems
d) -
e) -
f) Stems and leaves made into a decoction for earache. Also used for relief of congestion. Used for abortion. (Luiseno)
g) Bean & Saubel 1972:56 (Cahuilla)
Sparkman 1908:231. (Luiseno)
Hinton 1975:218 (La Huerta Diegueno)

Cucurbita foetidissima HBK.
a) Calabazilla, wild squash
b) Sandy and gravelly places below 2,000 ft. c.s.s.; v. grassland, etc. cismontane. to 4,000 ft. in shadscale scrub - Mojave Desert.
c) Seeds
Root
Blossoms
d) June - August (Munz)
e) Seeds ground into flour for mush

f) Roots and squash cut into pieces and used as soap. Roots mashed and applied to sores. Dried root boiled in water and used as emetic. Blossoms used to make yellow dye. Ladles made from gourds.
g) Bean & Saubel 1972:58 (Cahuilla)
Balls 1962:73-74.
Sparkman 1908:229. (Luiseno)
Hedges 1966:42 (Diegueno)

Cuscuta californica H & A.
a) Dodder
b) On many herbs and shrubs to 8,200 ft.; many plant communities; cismontane.
c) Whole plant
d) -
e) -
f) Handfuls of the plant gathered and used as scouring pads.
g) Bean & Saubel 1972:59 (Cahuilla)

Dalea emoryi Gray
a) Indigo bush
b) Dry open places below 1,000 ft.; C.B.S.; Colorado Desert.
c) -
d) -
e) Plant steeped in water to make a yellowish-brown dye for baskets. Stalk of plants used for foundation in basket making. Used medicinally.
f) -
g) Bean & Saubel 1972:59 (Cahuilla)
Palmer 1878:654 (S. Calif.)
Merrill 1923: 237 (S. Calif., Cahuilla, Diegueno, Luiseno, Lupeno, Chum.)
Balls 1962:77-78 (Calif.)
Barrows 1900:43 (Cahuilla)

Datura meteloides A. DC.
a) Jimsonweed
b) Sandy & gravelly dry open slopes, below 4,000 ft.; c.s.s.; v. grassland; J.-T. wd.; C.B.S.; etc.
c) All parts of plant
d) -
e) -
f) Roots used in a drink; leaves were smoked; leaves and roots crushed into a medicinal paste. Used by shamans and for medicinal purposes: pain killer, to relieve swelling, cure insect and snake bites, to relieve bronchial and nasal congestion. Also used ceremonially. (See Bean & Saubel) By Cahuilla, Juaneno, Gabriglino, Luiseno.
g) Bean & Saubel 1972:60-65 (Cahuilla)
Strong 1929:179-180
Balls 1962:66-67
Sparkman 1908:207, 229 (Luiseno)
Barrows 1900:75-76, 80 (Cahuilla)
Munz 197 :830
Hedges 1966:25-26 (Diegueno)
Curtis 1926:18-20 (Luiseno) 47-48 (Diegueno)
Kroeber 1925:625 (Gabrielino) 640 (Juaneno) 668-674 (Luiseno)

Descurainia pinnata (Walt.) Britton
a) Pepper grass, tansy-mustard
b) Dry sandy places below 8,000 ft. many communities
c) Leaves
Seeds
d) Feb - June
April - July
e) Leaves used as pot herbs. Ground seeds used to flavor soups.
f) Ground seeds also used as medicine for stomach ailments.
g) Bean & Saubel 1972:66 (Cahuilla)
Balls 1965:25-26.

Dichelostemma pulchella (Salis B.) Heller
a) Blue dicks; wild hyacinth
b) Common on plains and hillsides below yellow pine forest. In the desert, C.B.S. and above.
c) Corms
d) Feb. - April (var.)
e) Eaten raw or cooked.
f) -
g) Bean & Saubel 1972:48 (Cahuilla)

Dicoria canescens T&G.
a) -
b) Open sandy places, C.B.S.
c) Seeds (archeological evidence)
d) Oct - Feb ? (Munz)
e) -
f) -
g) Wilke, King & Hammond 1975:60 (Cahuilla)

Distichlis spicata (L.) Greene var. stricta (Torr) Beetle
a) Saltgrass
b) Alkaline soils at elevations up to 7,000 ft. Many plant communities dismontane & desert.
c) Plant
d) -
e) Salt obtained from plant directly or from the ashes of the plant after it was burnt. Plant also used as a cleaning agent.
f) -
g) Bean & Saubel 1972:66.

Dudleya Britt & Rose spp.
a) Live-forever
b) 23 spp. in S. Calif. Dry, rocky cliffs and slopes below 9,000 ft. Many communities, esp. chaparral.
c) Leaves
Flowering stem
d) Year round
April - July (depending on spp.)
e) Leaves and stems eaten raw. A delicacy for the Cahuilla.
f) Leaves used to remove corns and callouses (Diegueno)
Roots made into decoction as a cure for asthma (Diegueno)
g) Bean & Saubel 1972:67 (Cahuilla)
Sparkman 1908:232 (Luiseno)
Hedges: 1966:29 (Diegueno)

Echinocactus polycephalus Engelm. & Bigel.

a) Nigger-heads
b) Rocky slopes 2000 - 5000 ft.; C.B.S., Mojave & N. Colorado deserts.
c) Bud
d) May - June
e) Edible bud
f) -
g) Bean & Saubel 1972:69 (Cahuilla)
   Curtis 1926:24

Elymus condensatus Presl

a) Rye grass
b) Dry places below 7000 ft.; C.J.S.; chaparral; s. oak wd.; cismontane.
c) Stalk
d) -
e) Stalk used for mainshaft of arrows and for roof thatching.
   Whistle used in "ant" ordeal by Luiseno (Kroeber)
f) -
g) Bean & Saubel 1972:69 (Cahuilla)
   Spartkman 1908:205, 234 (Luiseno)
   Barrows 1900:37 (Cahuilla)
   Kroeber 1925:665

Encelia farinosa Gray

a) Brittle bush
b) Dry strong slopes below 3000 ft.; C.B.S.; C.S.S.;
c) -
d) -
e) Gum of the plant used as a pain reliever - heated and applied to
   the chest. Blossoms, leaves and stems boiled to make a decoction
   for relief of toothache.
f) -
g) Bean & Saubel 1972:69 (Cahuilla)

Ephedra californica Wats.

a) -
b) -
c) Branches
d) Year round
e) -
f) Branches brewed into a tea, good for kidneys, to purify blood
   and to improve appetite.
g) Hedges 1966:16 (Diegueno)

Ephedra nevadensis Wats.
a) Mormon tea
b) Dry slopes and hills below 4500 ft.; C.B.S.; J.-T. wd.
c) Seeds (?)
Twigs
d) -
e) Seeds ground into meal and eaten as mush (?)
Twigs made into tea, used as a generally healthful beverage.
f) -
g) Bean & Saubel 1972:70 (Cahuilla)
Barrows 1900:73-74 (Cahuilla)
Balls 1962:39, 73, 79
Hinton 1975:216 (La Huerta Diegueno)

Equisetum L. spp.
a) Horsetail, scouring rush
b) Damp or wet places below 10,000 ft.
c) -
d) -
e) -
f) Used as scouring pad, and medicinally for curing kidney stones and dysentary.
g) Bean & Saubel 1972:70-71 (Cahuilla)

Eriodyctyon crassifolium Bentham.
a) Yerba santa
b) Dry gravelly and rocky places below 6000 ft.; chaparral; P-J wd.; etc. cismontane.
c) Leaves (?)
d) ?
e) Much valued for medicinal purposes. (Sparkman)
See Eriodictyon trichocalyk
f) -
g) Sparkman 1908:230 (Luiseno)

Eriodictyon trichocalyx Heller.
a) Yerba santa
b) Dry rocky slopes and fans below 8000 ft.; chaparral, yellow pine f.; P.-J. wd.; J.T. wd.;
c) -
d) -
e) -
f) Tea made of leaves purifies the blood, and is a cure for coughs, colds, sore throat, asthma, catarrh, T.B. and rheomatism. Leaves pounded up and put on sore or fatigued limbs, and as cure for rheumatism.
Leaves chewed as thirst quencher.

g) Bean & Saubel 1972:71 (Cahuilla)
Barrows 1900:78 (Cahuilla)
Palmer 1878:751
Balls 1962:63
Hinton 1975:219 (La Huerta Diegueno)

Eriogonum michx. spp.
a) Buckwheat
b) 67 spp. in S. California. Many plant communities.
c) Shoots
Seeds
Leaves
d) Feb-May (desert areas)
June – Sept.
e) Edible shoots; seeds also eaten (Cahuilla)
f) Decoction made from leaves drunk as cure for headaches and stomach disorders. Leaves used as physhic. Tea made from [illegible] used to treat dyemenorrhea. Tea from flowers given to babies to cure diarrhea (Diegueno). Tea drunk to combat heart trouble (La Huerta)
g) Bean & Saubel 1972:72 (Cahuilla)
Barrows 1900:78 (Cahuilla)
Hinton 1975:216-217 (La Huerta Diegueno)
Hedges 1966:23 (Diegueno)

Eriophyllum confertiflorum (D.C.) Gray.
a) Golden-yarrow
b) Dry slopes and washes; C.S.S.; chaparral; w. slopes of Colorado desert.
c) Seeds
d) May - November (depending on locale)
e) Seeds parched and ground into flour
f) –
g) Bean & Saubel 1972:72 (Cahuilla)

Erodium l'her spp.
a) Filaree
b) E. macrophyllum H & A: open places below 3500 ft.
L.A. County north, San Diego Co.
E. texanum gray: sandy or gravelly places below 3500 ft.
C.B.S.; Colorado and E. Mojave
c) Young plant
d) January - April
e) Pot herb, cooked while fresh
f) -
g) Bean & Saubel 1972:72-73 (Cahuilla)

Eschscholzia cham. spp.
 a) California poppy
 b) Many plant communities up to 6500 ft. cismontane and parts of both deserts.
 c) Greens (E. Californica)
 d) ? (early spring?)
 e) Leaves eaten as greens (Sparkman 1908, only)
 f) Pollen used as facial cosmetic. Sedative for babies (form is not explained - perhaps as a tea?).
 g) Bean - Saubel 1972:73 (Cahuilla)
 Sparkman 1908:196,232 (Luiseno)

Euphorbia L. spp.
 a) Spruce
 b) Most plant communities
 c) Whole plant
 d) -
 e) -
 f) Used as medicine for reducing fever, to cure sores in mouth, for snakebite. Sap of E. melanadenia used to cure earaches and as a remedy for bee stings. Decoction of E. polycarpa used to wash sores (Diegueno)
 g) Bean & Saubel 1972:73-74 (Cahuilla)
 Hooper 1920:352 (Cahuilla)
 Sparkman 1908:231 (Luiseno)
 Hedges 1966:19 (Diegueno)

Ferocactus acanthodes (Lem) Britton & Rose.
 a) Barrel cactus
 b) Rocky slopes, gravelly fans to 5000 ft.; C.B.S.; J.T.wd.; P.-J. wd.
 c) Buds
 Flower
 Body of plant
 d) April - June
 April - May
 year round
 e) Buds eaten fresh, parboiled then eaten or dried, or steamed and dried. Flowers parboiled and dried. Water can be obtained from the body of the plant by cutting off the top and squeezing the pulp.
 f) Body of plant could be used as a cooking vessel into which were put water and hot stones. Spines used as awls.
 g) Bean & Saubel 1972:68 (Cahuilla)
 Balls 1965:42 - 43.

Fouquigria splendens Engelm.

a) Ocotillo
b) Dry, mostly rocky places below 2500 ft.; C.B.S.
c) Blossoms
   Seeds
   Stalks
d) March - July
   April - August ?
   Year round
e) Blossoms eaten fresh or soaked in water to make a drink. Seeds parched and ground into flour for mush or cakes.
f) Stalks used for fences, and as firewood.
g) Bean & Saubel 1972:79 (Cahuilla)
   Barrows 1900:60, 66, 73 (Cahuilla)

Fragaria vesca L. ssp. calilornica (C&S) Staudt.

a) Wild strawberry
b) Shaded dampish places 4000 - 7000 ft.; mostly montane coniferous forest.
c) Fruit
d) April - June
e) Eaten fresh
f) Leaves made into tea for curing diarrhea. (Diegueno)
g) Bean & Saubel 1972:74-78. (Cahuilla)
   Hedges 1966:30 (Diegueno)

Gutierrezia microcephala (DC) Gray

a) Matchweed
b) Open desert up to 7500 ft. shad. scrub, c.b.s., J.T. wd., Mojave desert.
c) Plant
d) -
e) -
f) A solution made from the plant used as a gargle for toothaches.
g) Bean & Saubel 1972:75. (Cahuilla)

Gutierrezia sarothrae (Pursh) Britt & Rusby

a) Matchwood
b) Desert plains and slopes below 10,000 ft.
c) Flowers
   Roots
d) May - Oct.
e) -
f) Tea made from fresh flowers or roots, used to combat diarrhea.
g) Hinton 1975:220 (La Huerta Diegueno)

Haplopappus acradenius (Greene) Blake

a) -
b) Subalkaline or candy flats 1500 - 3500 ft.
   Alkaline sink; shadscale scrub. J.T. wd.; S.W. Mojave
c) -
d) -
e) -
f) Root cut into pieces and boiled. Infusion drunk usually for colds. For sore throat, the steam of leaves soaked in boiling water was inhaled.
g) Bean & Saubel 1972:75. (Cahuilla)
   James 1906:247.

Haplopappus parishii (Greene) Blake

a) -
b) Dry slopes 1500 - 7000 ft.; chaparral; from S. slopes of S. Gabriel Mts. south.
c) Seeds
   Plant/leaves?
d) Sept. - Dec. (Munz)
e) Seeds eaten
f) Plant used medicinally
g) Sparkman 1908:228. (Luiseno)

Haplopappus palmeri Gray

a) -
b) C.S.S. below 2500 ft.
c) -
d) -
e) -
f) Leaves and hot rocks used to relieve swelling on feet & arms, and reduce possibility of infection from cuts.
g) Bean & Saubel 1972:76 (Cahuilla)
   Barrows 1900:78 (Cahuilla)

Haplopappus propinquus Blake

a) -
b) Dry brushy slopes below 4500 ft.; chaparral; S. San Diego Co.
c) Entire plant
d) -
e) -
f) Tea made from plant drunk in cold weather to combat "pasmo" (a malady with chills as the symptoms. Tea used to wash a wound.
g) Hinton 1975:220 (La Huerta Diegueno)

Haplopappus squarrosus
a) -
b) Dry slopes below 4500 ft.; C.S.S.; chaparral.
c) Plant
d) -
e) -
f) Plant boiled in water, used for bathing to cure aches and pains.
g) Hinton 1975:220 (La Huerta Diegueno)

Heterotheca grandiflora
a) Telegraph weed
b) Sandy open coastal valleys below 3000 ft. Weedy; C.S.S.; chaparral; S. oak wd.
c) Stems
d) ?
e) -
f) Stems used for small arrows
g) Sparkman 1908:206;228. (Luiseno)

Helianthus annuus L.
a) Common sunflower
b) Waste places & roadsides, frequent at lower elevs. up to 5000 ft., many plant communities except Mojave Desert.
c) Seeds
d) Sept. - Nov. (Munz)
e) -
f) Seeds dried, then ground and mixed with flour from other seeds.
g) Bean & Saubel 1972:76 (Cahuilla)
Sparkman 1908:228 (Luiseno)

Hemizonia fasciculata (DC) T & G
a) Tarweed
b) Dry coastal plains below 1000 ft., C.S.S., S. & W., v. grassland
c) Whole plant
d) During famines
e) Plant boiled
f) -
g) Bean & Saubel 1972:77 (Cahuilla)
Palmer 1878:605

Hesperocallis undulata Gray
a) Desert lily
b) Dry sandy flats and gentle slopes below 2500 ft. C.B.S.; eastern Mojave Desert & Colorado Desert.
c) Bulb
d) February - May
(not dependable)
e) Bulbs eaten raw or baked in a pit
f) -
g) Bean & Saubel 1972:77 (Cahuilla)

Heteromeles arbutifolia M. Roem.
a) Toyon; Christmas berry; Calif. holly
b) Common on semidry brushy slopes below 4000 ft. canyons; chaparral.
c) Berries
d) Sept. - Feb. [Nov.-Dec.]
e) Berries eaten raw or slightly roasted.
f) Potion of bark and leaves can be used to wash wounds
g) Bean & Saubel 1972:77 (Cahuilla)
Balls 1965:36-37
Sparkman 1962: 194,232. (Luiseno)
Hinton 1975:217. (La Huerta Diegueno)
Curtis 1926:8

Holodiscus discolor (Pursh) Maxim
a) Ocean spray
b) Woods and rocky places below 9500 ft.; chaparral
c) Fruit
d) June - Sept.
e) "Good food"
f) -
g) Barrows 1900:61 (Cahuilla)

Holodiscus microphyllus R4BD
a) -
b) Dry rocky slopes 5500 - 11,000 ft.; P.-J. wd.; coniferous forest; San Bernardino Mts.; E. Mojave Desert.
c) Seed? Fruit?
d) July - Sept. ?
e) Use not documented
g) Bean & Saubel 1972:73 (Cahuilla)

Hydrocotyle L. spp.
a) Marsh pennywort
b) Slow streams, ponds, & wet places, below 5000 ft. Many plant communities. Cismontane to desert edge.
c) Plant
d) ?
e) Eaten as greens
f) -
g) Bean & Saubel 1972:79 (Cahuilla)

Hyptis emoryi Torr.
a) Desert lavender
b) Common in washes & canyon below 3000 ft., C.B.S. Colorado & S. Mojave Desert.
c) -
d) -
e) -
f) Infusion made from blossoms and leaves and used for stopping hemorrhages.
g) Bean & Saubel 1972:79 (Cahuilla)

Isomeris arborea Nutt.
a) Bladderpod
b) Subsaline places, such coastal bluffs and stabilized dunes. Sandy washes below 4000 ft.; c.s.s.; C.B.S.; J.-T. wd.
c) Flowers
Pods
d) Most of the year
Most of the year
e) Pods gathered and cooked in the ground with hot stones.
f) -
g) Barrows 1900:66 (Cahuilla)
Hinton 1975:217 (La Huerta Diegueno)

Juncus L. spp.
a) Rush
b) Moist places in many communities.
c) Stalk
d) -
e) -
f) Used for a variety of colors in basket making; coiling material.
g) Bean & Saubel 1972: 80-81 (Cahuilla)
Barrows 1900:42-43 (Cahuilla)
Merrill 237:237 (Cahuilla, Luiseno, Diegueno, Chumash.)
Sparkman 1908:234;204. (Luiseno)
Curtis 1926:11 (Luiseno) 26 (Cahuilla) 44 (Diegueno)
Hedges 1966:8 (Diegueno)

Juniperus californica Carr.
a) California juniper
b) Dry slopes and flats mostly below 5000 ft.
P.-J. wd.; J.T. wd.; chaparral
c) Berries
Bark
d) June - August
e) Berries eaten fresh or dried and ground into flour for mush or bread.
f) Berries used for making tea. Bark used for treatment of colds, fever, and constipation.
g) Bean & Saubel 1972:81-82.
Hinton 1975:216.
Merrill 1923:238 (Mojave)

Larrea tridentata (Sesse & Moc. ex DC) Cou.
a) Creosote bush
b) Dry slopes and plains up to about 5000 ft.
c) -
d) -
e) -
f) Tea made from stems and leaves used for colds, constipation, chest infections, menstrual cramps. Leaves boiled and steam inhaled to relieve lung congestion. Poultices made from leaves for wounds. Powder from crushed leaves applied to wounds or sores.

g) Bean & Saubel 1972:83-84 (Cahuilla)
Barrows 1900:79,48,78 (Cahuilla)

Lasthenia clabrata Lindl.
a) Goldfields
b) Salt marshes, damp alkalispots; alkali sink; coastal march; etc.
c) Seeds
d) May - July
e) Seeds parched and ground into flour; eaten dry or mixed with water as a mush.
f) -
g) Bean & Saubel 1972:84
Barrows 1900:65

Layia Hook & Arn. spp.
a) Tidy tips
b) 3 spp.; many plant communities. Open places, below 8000 ft.
c) Seeds
d) May - August
e) Seeds ground into flour, and mixed with other seed flours in a mush.
f) -
g) Bean & Saubel 1972:84-85.
Sparkman 1908:228.

Lepidium L. spp.
a) Peppergrass
b) Common below 3000 ft.; C.S.S.; v. grassland; chaparral.
c) Seeds
d) -
e) Leaves boiled and used to wash hair and prevent baldness.
Seeds and leaves
e) Seeds eaten, leaves used as pot-herbs.
f) -
g) Bean & Saubel 1972:85
Balls
Sparkman 1908:232,196.
Hedges 1966:20.
Curtis 1926:8

Lotus scoparius (Nutt) Ottley
a) Deerweed
b) Common on dry slopes & fans below 5000 ft.; c.s.s.; chaparral, coastal strand, etc.
c) -
d) -
e) -
f) Used in house construction
g) Bean & Saubel 1972:87 (Cahuilla)

Lotus strigosus (Nutt) Greene.
a) -
b) Dry disturbed places below 5000 ft. Many plant communities.
c) Leaves? Stems?
d) Feb - July? Probably used in later winter.
e) Used for greens
f) -
g) Sparkman 1908:231

Lupinus spp.
a) Lupine
b) Many plant communities; 48 spp. in S. Calif.
c) Leaves
d) Spring?
e) Used for greens
f) -
g) Sparkman 1908:231 (Luiseno)
Bean & Saubel 1972:87 (no use remembered by Cahuilla)

Lycium andersonii Gray
a) Box-thorn
b) Dry stony hills and mesas below 6000 ft. C.B.S.; P-J wd.; chaparral; C.S.S.
c) Berries
d) April - July (August?)
e) Berries eaten fresh or preserved by drying. Dried berry boiled into mush or ground into flour and mixed with water.
f) -
g) Bean & Saubel 1972:87

Lycium fremontii Gray
a) Box-thorn
b) Alkaline places below 1500 ft.; C.B.S. Colorado Desert.
c) Berries
d) April - July (August?)
e) Berries eaten fresh, or dried and boiled into mush or ground with flour and mixed with water.
f) -
g) Bean & Saubel 1972:87.

Malacothamnus greene spp.
a) -
b) 8 spp.; C.S.S.; chaparral; P.-J. wd.; yellow pine forest.
c) Leaves
d) ?
e) -
f) Decoction of leaves used as emetic.
g) Sparkman 1908:231 (Cahuilla)

Malacothrix californica DC.
a) -
b) Dry sandy places below 6000 ft.; v. grassland, c.s.s.; J.-T. wd., etc. Cismontane S. Calif. to western edge of desert.
c) Seeds
d) July - August? (Munz)
e) Seeds used for food.
f) -
g) Sparkman 1908:228

Marah macrocarpus (Greene) Greene.
a) Wild cucumber [Echinocystis macrocarpus]
b) Dry places mostly below 3000 ft.; c.s.s.; chaparral, S. oak wd.; cismontane S. Calif.
c) Seeds
Roots
d) March - June ? (Munz)
-
e) -
f) Seeds used in the manufacture of a red paint. Purgative made from roots. (Luiseno) For inflammations, eye disease, wounds, urinary trouble. (Gabielino)
g) Sparkman 1903:210,229. (Luiseno)
Kroeber 1925:628 (Gabrielino)

Mentzelia L. spp.
a) Blazing star
b) 27 spp. in S. Calif.; many plant communities
c) Seeds
d) Feb.-Oct. (depending on spp.)
e) Seed parched and ground into flour for mush.
f) -
g) Bean & Saubel 1972:83-89.

Monardella lanceolata Gray
a) -
b) Dry places, especially disturbed, below 8000 ft. Many plant communities. San Diego Co. north.
c) Plant (leaves?)
d) -
e) -
f) Tea made from plant. Used medicinally and as a beverage.
g) Sparkman 1908:211,229 (Luiseno)

Muhlenbergia rigens (Benth.) Hitchcock
a) Deer grass [Epicampes rigens]
b) Dry or damp places below 7000 ft.; v. grassland, chaparral; yellow pine forest.
c) Stalk
d) -
e) -

f) Stalk used in basketmaking - very important. Used to make images of the dead, for the morning ceremony (Cupeno)
g) Bean & Saubel 1972:89 (Cahuilla)
Balls 1962:48,57.
Sparkman 1908:204,234. (Luiseno)
Merrill 1923:236 (Luiseno, Diegueno, Cahuilla, Cupeno)
Gifford 1918:198
Curtis 1926:11 (Luiseno) 26 (Cahuilla) 44 (Diegueno)
Hedges 1966:8 (Diegueno)

Nicotiana L.
a) Tobacco
b) Many plant communities below 4000 ft.
c) -
d) -
e) -
f) Tobacco chewed, smoked, or drunk. For ritual purposes, as well as for relaxation and medicine (see Bean & Saubel and Balls).
g) Bean & Saubel 1972:90-99 (Cahuilla)
Strong 1929:132
Hooper 1920:318 (Cahuilla)
Barrows 1900:74-75 (Cahuilla)
Palmre 1878:650
Balls 1962:81-85 (Calif.)
Sparkman 1908:229.

Nolina bigelovii (Torr.) Wats.
a) Nolina
b) Dry slopes below 3000 ft.; C.B.S.
c) Flowering stalk
d) May - June
e) Stalk baked in pit.
f) -
g) Bean & Saubel 1972:94

Olneya tesota Gray
a) Desert ironwood
b) Desert washes, below 2000 ft.; C.B.S.; Colorado desert
c) Pods and seeds
Wood
d) May - June
e) Pods and seeds ground into flour after roasting.
f) Wood used to make tools and for firewood.
g) Bean & Saubel 1972:94-95.

Opuntia spp.
a) Prickly pear
b) -
c) Fruits
Buds/joints
d) May - June
e) Fruits eaten
Joints diced and eaten
f) -
g) Bean & Saubel 1972:97 (Cahuilla)
Hedges 1966:21 (Diegueno)

Opuntia acanthocarpa Engelm & Bigel.
a) Buckhorn cholla
b) Sandy or gravelly places 2000 - 4300 ft.; C.B.S.; J.T. wd.; Colorado Desert.
c) Fruit
Stems (ashes)
d) -
e) Fruit eaten fresh or dried for storage.
f) -
g) Bean & Saubel 1972:95

Opuntia basilaris Engelm. & Bigel.
a) Beavertail cactus
b) Dry benches and fans up to 6000+ ft.; C.B.S.; J.-T. wd.; both deserts.
c) Young fruit buds
Stem joints
Seeds
d) March - June
e) Buds cooked or steamed and eaten or dried. Joints boiled. Seeds ground into edible mush. Ripe fruits eaten raw (Diegueno)
f) -
g) Bean & Saubel 1972:95
Balls 1962:34-35
Barrows 1900:67
Hedges 1966:22

Opuntia bigelovii Engelm.
a) Jumping cholla
b) Fans, benches, and lower slopes below 3000 ft,; C.B.S.; Colorado Desert & S.E. Mojave.
c) Buds
d) April - June
e) Buds cooked
f) -
g) Bean & Saubel 1972:96

Opuntia ramosissima Engelm. [O. tessellata engelm.]
a) Pencil cactus
b) Dry washes, slopes & mesas below 4200 ft.; C.B.S., J.T. wd.; deserts
c) Fruits
Stalk
d) May - June
e) Fruits and diced stalks eaten.
f) -
g) Bean & Saubel 1972:97

Orobanche cooperi (Gray) Heller
- a) Broom mape
- b) Below 4000 ft., parasitizing, larrea, ambrosia, hymenoclea.
- c) Roots
- d) April - June
- e) Roots roasted and peeled before eating.
- f) -
- g) Bean & Saubel 1972:97-98.
  Barrows 1900:66

Orobanche bulbosa (Gray) G. Beck [O. tuberosa]
- a) Cancer root
- b) On adenostoma and associates, below 5000 ft. chaparral
- c) Roots
- d) Year-round?
  April - July is blooming period.
- e) Roots - used for food.
- f) -
- g) Sparkman 1908:229

Paeonia californica Nutt.
- a) Peony
- b) Brushy places below 4000 ft.; chaparral, c.s.s., S. oak wd.
- c) Leaves
- d) ?
- e) Leaves boiled and eaten as greens (Hedges)
- f) Roots ground and made into decoction for colds, sore throat and chest pains, and indigestion.
- g) Bean & Saubel 1972:98
  Hedges 1966:17

Palafoxim linearis (Cav.) Lag.
- a) Spanish needles
- b) Sandy places below 2500 ft.; C.B.S.; Alkali sink; Mojave & Colorado Deserts.
- c) Plant
- d) -
- e) -
- f) Herb used as a source of yellow dye.
- g) Bean & Saubel 1972:98 (Cahuilla)

Panicum L. spp.
- a) Panic grass
- b) Many communities below 8000 ft. 6 spp.
- c) Seeds
- d) May - Dec. depending on sp. & elevation, etc.
- e) Boiled and made into gruel.
- f) -
- g) Bean & Saubel 1972:98-99
- h) "According to Paul Chace, former curator of Bowers Museum, Santa Ana, an olla found by hikers near Palm Springs in 1969 was filled with the seeds of Panicum urvilleanum" B&S:99.

Pellaea mucronata (D.C. Eat.) D.C. Eat. [P. ornithopus]
a) Bird's foot fern
b) Dry rocky places; many plant communities. Throughout cismontane Calif. Sparingly on deserts. Var. Californica above 6000 ft. in forests of S. Calif.
c) Fronds
Roots (?)
d) -
e) -
f) Fronds used to make medicinal tea, also drunk as beverage. Not used medicinally by La Huerta Diegueno (Hinton). Roots boiled and the decoction drunk for hemorrhage (Hedges).
g) Sparkman 1908:211,234.
Hinton 1975:215
Hedges 1966:15

Penstemon centranthifolius Benth.
a) Scarlet bugler
b) Dry disturbed places below 6500 ft.; chaparral.
c) Flowers
d) April - July
e) Flowers sucked for nectar
f) -
g) Hinton 1968:219 (La Huerta Diegueno)

Perezia microcephala (DC) Gray
a) Scapollote
b) Dry slopes below 4000 ft.; chaparral.
c) Leaves? or plant
d) -
e) Leaves? used to provide a decoction for a remedy for constipation.
f) -
g) Bean & Saubel 1972:99 (Cahuilla)
Barrows 1900:78 (Cahuilla)

Perideridia gairdneri (H & A) Mathias
a) Sqaw root
b) Wet places at low elevations.
c) Roots (tubers)
d) Year-round
e) Tuberous roots eaten raw or cooked.
f) -
g) Bean & Saubel 1972:99
Munz 1974:83

Phacelia ramosissima Doubl.
a) Phacelia
b) In canyons below 8000 ft. Mostly chaparral and yellow pine forest.
c) Leaves (?)
d) Perennial
e) Used for greens
f) -
g) Sparkman 1908:230. (Luiseno)

Phoradendron Nutt. spp.
a) Mistletoe
b) Parasitic on prosopis & acacia (P. californicum) and on Juniperus (P. juniperinum Engela.) These two species were utilized by the Cahuilla.
c) Berries
Leaves
d) November to April
e) Berries eaten fresh. Ground & mixed with ashes.
f) Berries pounded into flour, sprinkled onto wounds. Plant cooked and used as dandruff treatment (Diegueno).
Leaves boiled with basketry materials to dye them (Cahuilla).
Tea made from berries may have had medicinal uses (Cahuilla).
g) Bean & Saubel 1972:101
Barrows 1900:80
Spier 1923:391 (Diegueno)
Hedges 1966:39
Curtis 1926:24,26

Phragmites australis (Cav) Trinius
a) Common reed
b) Wet places below 5000 ft.; in the deserts, edge of alkali sink, C.B.S.; many plant communities in cismontane California.
c) Stalk
d) -
e) -
f) Used for thatching material in house construction, cordage made from stems used in weaving carrying nets and baby hammocks. Culm provided the rear end for two-piece arrows.
g) Bean & Saubel 1972:101-102 (Cahuilla)
Barrow 1900:50,49,47,37 (Cahuilla)

Pinus monophylla Torr. & Frem.
a) One-leaved pinyon
b) Dry rocky slopes and ridges 3500 - 9000 ft.; P - J wd. Mojave Desert.
c) Seeds
d) August
e) Cones heated to release nuts and parch them. Hulls cracked and nuts winnowed. Nuts stored in ollas or caches. Eaten whole, or ground and made into mush. A drink could be made by mixing with water.

f) Pinyon wood sought for firewood. Needles used as basketry material. Pine pitch used as adhesive for mending pots and baskets, and for attaching pine bark used for roofing material.
g) Bean & Saubel 1972:102-105
Barrow 1900:63,48
Munz 1974:40
Balls 1965:23-29
Joël 1976:62-66
Hinton 1975:215
Hedges 1966:15-16 (Diegueno)

Pinus ponderosa
a) Yellow pine
b) -
c) -
d) -
e) -
f) Needles used for baskets. Bark used to make shelters
g) Hedges 1966:8,16 (Diegueno)

Pinus quadrifolia Parl.
a) Four-leaved pinyon
b) Dry slopes, 3500 - 5500 ft.; P-J wd.; W. edge of Colorado Desert south from Santa Rosa & San Jacinto Mts.
c) Seeds
Needles
Wood - bark
d) August
-
-
e) Cones heated to release nuts and parch kernels. Nuts eaten whole or ground and made into mush.
f) Good firewood. Pine needles used for baskets. Pine pitch used as adhesive. Bark used for roofing materials.
g) Bean & Saubel 1972:102-105.
Almstedt 1968:10,12.
Munz 1974:42.
Joël 1976:62-66.
Hinton 1975:215-216.
Curtis 1926:43 (Diegueno)

Platanus racemosa Nutt.
a) Sycamore
b) Along stream beds and watercourses below 4000 ft. Many plant communities.
c) -
d) -
e) -

f) Wood used for bowls (Cahuilla).
Bark made into tea as tonic for the blood (La Huerta Diegueno)
And for asthma (Diegueno).
g) Bean & Saubel 1972:105 (Cahuilla)
Hinton 1975:217 (La Huerta Diegueno)
Hedges 1966:33 (Diegueno)

Pluchea sericea (Nutt.) Cou.
a) Arrowweed
b) Wet places like river bottoms; c.s.s., C.B.S.
c) Roots
Stems
d) Year round
e) Roots roasted and eaten (Cahuilla)
f) Stems used for roofs, house walls, granaries, and fences. Also used to make arrows.
g) Bean & Saubel 1972:105-106. (Cahuilla)
Sparkman 1908:206,228. (Luiseno)
Curtis 1926:6, 9. (Luiseno) 23, 25.

Populus fremontii Wats.
a) Cottonwood
b) Moist places below 6500 ft.; several plant communities
c) -
d) -
e) -
f) Wood used in the manufacture of tools, and for wooden mortars. Excellent firewood. Leaves and bark boiled into a poultice to relieve muscle strain. Solution of hot water, bark and leaves used in treating cuts and sprains. Inner bank used to make apron for women (Luiseno)
g) Bean & Saubel 1972:106 (Cahuilla)
Sparkman 1908: 201, 233. (Luiseno)
Hinton 1975: 216 (La Huerta Diegueno)
Gifford 1931:19, 23, 40-41.
Curtis 1926:7

Proboscidea althaeifolia (Benth.) DCNE.
a) Devil's claw; unicorn-plant
b) Occasional in sandy places; C.B.S.; Imperial Co.
c) Seeds
d) Summer
e) Seeds eaten (Cahuilla)
f) Thorns used as a tool in mending baskets and pottery. Seed pod used for black pattern in basketry.
g) Bean & Saubel 1972:107.
Merrill 1923:238 (S.E. Calif.; Chemehoguii, Kawiisu, Kitanemuk)

Prosopis glandulosa Torr. var. Torreyana (L. Benson) M.C.

a) Mesquite [P. juliflora]
b) Washes and low places below 4000 ft.; C.B.S.; alkali sink; Colorado & Mojave deserts; interior cismontane.
c) Pods
Blossoms
Wood
Sap - gum
Bark

d) May - August
April - June
-
e) Blossoms roasted, stored, then boiled as needed. Also used to make tea. Green pods pounded or artificially ripened. Mature pods eaten or ground into meal. Hardened meal made into cakes. which were eaten dry, made into mush or a drink.
f) Trunks used for wooden mortars, limbs for bowmaking. Good firewood. Bark made into fiber. Gum used for adhesive. Used as posts, rafters, etc. in house construction. Skirt made of mesquite bark (Curtis)
g) Bean & Saubel 1970:107-117. (Cahuilla)
Strong 1929:47-50. (Cahuilla)
Hooper 1920:367,357-358. (Cahuilla)
Barrows 1900:55-56, 52, 75, 38, 48, 73 (Cahuilla)
Balls 1962:20-22
Sparkman 1908:231, 196. (Luiseno)
Almstedt 1968: 10, 12 (Diegueno)
Hinton 1975:218 (La Huerta Diegueno)
Kroeber 1925:709. (Cahuilla) 722 (Diegueno)
Spier 1923:392, 350, 359 (Diegueno)
Gifford 1931:19, 23, 32, 36, 39, 40. (Kamia)
Curtis 1926:8 (Imported by Luiseno) 22, 24, 29, 25, 162 (Cahuilla)
Bean & Saubel 1961:238 (Cahuilla)
Merrill 1923:237 (Mojave)
Bean & Saubel 1963:55-79 (Cahuilla)
h) Mesquite flour given to prospective wife's parents (Curtis 1926:28)
War clubs made of mesquite weed (Diegueno-Kroeber)

Prosopis pubescens Benth.

a) Screw-bean
b) Washes and canyons below 2500 ft.; C.B.S. Mojave Desert to San Jaquin Valley.
c) Pods
Roots
Limbs, bark
d) June - August
-
-
e) Ripe pods dried, and sometimes cured in pits before eating (B&S:118). Used and prepared in the same manner as mesquite.
f) Bark and roots have medicinal value(?) Limbs used in construction. Mescal cutter made from screw-bean. Bows made from limbs.
g) Bean & Saubel 1972:118-119.
Balls 1962:22-23
Barrows 1900:49, 56
Curtis 1926:24, (Cahuilla)
Bean & Saubel 1963:55-74.

Prunus andersonii Gray

a) Desert peach
b) Dry slopes and mesas; 3500 - 6500 ft.; sagebrush scrub, yellow pine forest.
c) Fruit
d) May - [June]
e) Fruits eaten. Kernels ground into flour for mush. Leached?
f) -
g) Bean & Saubel 1972:119-121.
Barrows 1900:61

Prunus emarginata (Dougl) Walp.

a) Bitter cherry [Cerasus emarginata Douglas]
b) Rocky ridges, slopes and canyons, 2,000 - 8,000 ft. Chaparral, montane coniferous forest.
c) Fruit pit
d) June
e) Pit used to make meal.
f) -
g) Bean & Saubel 1972:119
Almstedt 1968:10, 12

Prunus fasciculata (Torr) Gray

a) Desert almond
b) Dry slopes and washes, 2500 - 6000 ft.; C.B.S. to P-J wd.; Mojave and Colorado desert.
c) Fruit pit
d) May - June
e) Fruit pit used to make meal for mush.
f) -
g) Bean & Saubel 1972:119.

Prunus fremontii Wats.

a) Desert fremontii
b) Canyons below 4000 ft.; C.B.S. to P-J wd.
c) Fruit pit
d) May
e) -
f) -
g) Bean & Saubel 1972:119
   Almstedt 1968:12

Prunus ilicifolia (Nutt) Walp.

a) Holly-leaf cherry; islay
b) Dry slopes and fans below 5,000 ft.; chaparral, etc.
c) Kernels
   Fruit
d) August - Sept.
   August
e) Kernels crushed in mortar, leached, and boiled to make atole.
   Fruit eaten fresh or made into a drink.
f) Bark was used to make an infusion for curing colds.
g) Bean & Saubel 1972:119-121 (Cahuilla)
   Barrows 1900:60-61 (Cahuilla)
   Sparkman 1908:194, 232 (Luiseno)
   Balls 1965:15
   Almstedt 1968:12 (Diegueno)
   Hinton 1975:217-218
   Hedges 1966:31 (Diegueno)

Prunus virginiana L. var. demissa (Nutt) Sarg.

a) Western choke-cherry
b) Dampish places in woods below 8000 ft. Yellow pine forest.
   Canyons. P-J wd. ?
c) Fruit & pit
d) July - Oct. (?)
e) Fruit eaten fresh, or sun dried. Pits ground and used as a meal.
f) -
g) Bean & Saubel 1972:119-120.
   Barrows 1900:61
   Sparkman 1908:232
   Almstedt 1968:10, 12

Psoralea machrostachya DC.

a) None
b) Moist places below 5000 ft.; many communities.
c) Roots
d) Year round?
e) -
f) Roots boiled with basket weeds that were to be dyed - yellow dye.
   Medicine for ulcers and sores.
g) Bean & Saubel 1972:12 (Cahuilla)
   Sparkman 1908:231, 209 (Luiseno)
   Merrill 1923:237 (Luiseno)

Psoralea orbicularis Lindl.
a) -
b) Moist places below 5000 ft.; many plant communities, cismontane.
c) Plant
d) Spring?
e) Used for greens.
f) -
g) Sparkman 1908:231

Pteridium aquilinum (L.) Kuhn var. pubescens
a) Bracken
b) Moist places at lower elevations; groundcover in forests up to 10,000 ft.; many plant communities; many plant communities.
c) Young shoots
d) Year round?
e) Shoots scraped and boiled
f) -
g) Bean & Saubel 1972:121

Quercus agrifolia nee
a) Coast live oak
b) Valleys and not too dry slopes below 3000 ft. S oak wd.; chaparral; etc.
c) Acorns
Bark
Wood
d) October - November
e) Second favorite acorn (P. kelloggii first choice). Acorns ground in mortars, leached in basket or sand pit. Fine meal used in making acorn bread; coarser meal used in mush.
f) Ashes of wood & bark used as antiseptic wash. Bark used as preservative in tanning buckskin (Romero). Acorns used in necklaces, as bait in trigger traps. Excellent firewood. Important exchange commodity.
g) Hedges 1966:4-7
Barrows 1900:62
Romero: 1954:55
Sparkman 1908:193, 233
Bean & Saubel 1972:121-131
Almstedt 1968:10-11, 13
Bean & Saubel 1961:239
Curtis 1926:7
Joël 1976:66-69

Quercus chrysolepis Ligom.
a) Canyon oak, maul oak
b) Canyons and moist slopes below 6500 ft. Many plant communities.
c) Acorns
Wood/bark
d) October - November
e) Third choice for food, after Q. kelloggii & Q. aerifolia (Sparkman).
f) -
g) Sparkman 1908:193, 233 (Luiseno)
Bean & Saubel 1961:237-245 (Cahuilla)
Almstedt 1968:10-12 (Diegueno)
Hedges 1966:4-7 (Diegueno) (says not used for food)

Quercus dumosa Nutt.
a) Scrub oak
b) Dry slopes mostly below 5000 ft.; chaparral; foothill* wd; etc.
c) Acorn
Gall on bark
d) October - November
e) Acorns eaten & prepared as usual (see Q. kelloggii).
Not esteemed by Luiseno (Sparkman).
Said to have best flavor, by Diegueno (Almstedt).
Bean says it was least favorite of Cahuilla, used as additive or during shortages (Bean & Saubel 1972:123).
f) Fungus (oak gall) found on bark ground and used as eyewash or physic. Ashes of bark and wood used to make "healing" solutions.
g) Hedges 1966:4-7.
Almstedt 1968:10-12.
Bean & Saubel 1972:121-131.
Bean & Saubel 1961:237-295.
Barrows 1900:62.
Sparkman 1908:193, 233.
*Meal seems coarse and is heavy rather than smooth (Hedges).

Quercus engelmannii Greene
a) Engelmann oak
b) Dry fans and foothills below 4000 ft. and away from the coast.
Pasadena to E. San Diego County.
c) Acorns
Fungus on bark
d) October - November
e) Prepared in same manner as other acorns. Not much esteemed by Luiseno (Sparkman). Not much used, hard to grind (Hedges:4).
f) -
g) Hedges 1966:4-7.
Almstedt 1968:10-12.
Barrows 1900:62.
Sparkman 1908:193, 233.

Quercus kelloggii Newb.

a) Black oak
b) Hills and mountains mostly 4000 - 8000 ft. Coniferous forest.
c) Acorns
Wood
Bark
d) October - November
e) Most favored of acorns in Southern California. Acorns gathered by whole family, ground in portable or bedrock mortars, leached in baskets or sand pits. Acorns could be leached by cracking shells and soaking in water. Fine meal made into bread or cakes. Coarse meal used in mush. Could be stored for a year...
f) Excellent firewood. Ashes of wood and bark used to make an antiseptic wash. Bark could be used in tanning. Wood used for wooden mortars. Acorns strung as necklaces, used as bait in trigger traps. An important trade commodity.
g) Hedges 1966:4-7
Almstedt 1968:10-13
Barrows 1900:62 (called Q. dumosa - Cahuilla)
Sparkman 1908:193, 233.
Bean & Saubel 1972:121-131
Bean & Saubel 1961:237-295
Curtis 1926:7

Quercus wislizenii A. DC.

a) Interior live oak
b) Valleys and slopes below 5000 ft. Chaparral, mountains of So. Calif.
c) Acorns
d) October - November
e) Not much esteemed by Luiseno (Sparkman)
f) -
g) Sparkman 1908:193, 233
Barrows 1900:62
Almstedt 1968:10-12

Rhamnus californica Esch.

a) Coffeeberry
b) Ssp. californica - sandy & rocky places along coast, hillsides & ravines below 3500 ft.
Ssp. cuspidata - C.B.S. to P-J. wd. & yellow pine forest.
Ssp. tomentella - chaparral.
Ssp. ursina - canyons 4000 - 7000 ft.; J.T. wd.; P-J wd.
c) Berries
Bark
d) June - August
e) Berries steeped in water and drunk as a laxative or tonic. Bark dried, ground, used as a cure for constipation and poison oak.
f) -
g) Bean & Saubel 1972:131
Romero 1954:21
Saunders 1914:141
Hedges: 1966

Rhamnus crocea Nutt
a) Redberry; buckthorn
b) Dry washes & canyons below 3000 ft.; C.S.S.; chaparral; S. oak wd.;
c) Berry
d) August - October
e) "Edible berry"
f) -
g) Bean & Saubel 1972:131

Rhus integrifolia (Nutt) Benth. & Hooker
a) Lemonadeberry
b) Ocean bluffs & canyons, dry places below 2600 ft. C.S.S.; chaparral.
c) Berries
d) June - Sept.
e) Berries soaked in water to make a beverage.
f) -
g) Bean & Saubel 1972:132 (Cahuilla)
Sparkman 1908:231 (?) (Luiseno)
Balls 1965:43

Rhus ovata Wats.
a) Sugar bush
b) Dry bluffs & slopes below 4000 ft.; C.S.S., chaparral
c) Berries
Leaves
Sap
d) June - August
e) Berries eaten fresh or dried, ground into flour, and made into mush or a beverage. Tea was made.
f) From the leaves, and used for coughs & colds. What sap on fruit was used as a sweetener. Tea used to make birth quick & easy (La Huerta Diegueno)
g) Bean & Saubel 1972:131-132.
Sparkman 1908:231 (?)
Balls 1962:43
Barrows 1900:66, 79
Hinton 1975:218

Rhus trilobata Nutt.
a) Squaw bush
b) Canyons, washes, dry slopes, to 5500 ft. (depending on var.); C.S.S., chaparral, S. oak wd.; C.B.S. to P-J wd.
c) Berry
Stems
d) May to July
e) Berries eaten fresh, ground into flour used in soup, or soaked in water to make a beverage.
f) Stems used for the woof of baskets.

g) Bean & Saubel 1972:132 (Cahuilla)
Palmer 1878:597-593
Balls 1965:61
Sparkman 1908:195, 204, 231 (Luiseno)
Barrows 1900:42, 64
Kroeber 1925:695 (Cahuilla)
Merrill 1923:235 (Cahuilla, Luiseno, Diegueno)
Hedges 1966:40, 8 (Diegueno)
Curtis 1926:8, 11 (Luiseno) 44 (Diegueno) 26 (Cahuilla)

Ribes L. spp.
a) Gooseberry. Currant.
b) 18 spp. Most cismontane communities.
c) Berries
d) Generally available from March - Sept. With peak [May - July] depending on locality and sp.
e) Eaten fresh.
f) Root of some sp. used to cure toothache.
g) Bean & Saubel 1972:133
Sparkman 1908:197, 232.
Curtis 1926:8

Romneya coulteri Harv.
a) Matilija poppy
b) Dry washes and canyons below 4000 ft.; chaparral c.s.s.
c) Bush stalk
d) ?
e) Watery substance found in stalk was drunk.
f) -
g) Bean & Saubel 1972:133.

Rorippa nasturtium-aquaticum (L.) Schinz & Thell Not native
a) Water-cress [Nasturtium officinale]
b) Common in quiet water, on wet banks, etc. below 8000 ft. Many communities.
c) Plant
d) Perennial
e) Used for greens
f) -
g) Bean & Saubel 1972:90
Sparkman 1908:232, 196

Rosa californica C&S.
a) Wild rose
b) Fairly moist places, canyons, near streams, etc. below 6000 ft.; many communities; cismontane.
c) Buds
Blossoms
Rose hips
d) May - July
e) Buds picked just prior to blossoming and eaten. Blossoms soaked in water to make a beverage. Capsules eaten.
f) Tea given to babies with fever (Diegueno).
g) Bean & Saubel 1972:133
Barrows 1900:66
Hedges 1966:31

Rubus L. spp.
a) Blackberry, raspberry
b) 4 spp. Generally in woods or canyons, below 8000 ft. Many plant communities.
c) Berries
Roots
d) May - August [July]
e) Berries eaten fresh or dried and stored.
f) Juice used to stain articles made of wood. (Luiseno)
Roots made into decoction to remedy diarrhea.
Used to dye basket materials. (Luiseno)
g) Bean & Saubel 1972:134.
Sparkman 1908:194, 232.
Merrill 1923:239 (Luiseno)
Hedges 1966:30.
Curtis 1926:8

Rumex hymenosepalus Torr.
a) Wild rhubarb
b) Common in dry sandy places below 5000 ft.; c.s.s., v. grassland, chaparral, Joshua tree wd.; C.B.S.
c) Stalks
Roots
d) -
e) Stalks eaten as greens.
f) Roots used for tanning hides.
g) Bean & Saubel 1972:134-135.

Rumex sp. L.
a) Dock, sorrell
b) Many plant communities below 8000 ft.
c) Root
d) -
e) -
f) Decoction of the root used medicinally
g) Sparkman 1908:233 (Luiseno)

Salicornia subterminalis Parish.
a) Pickleweed
b) Salt marshes and low alkali places; coastal salt marsh, alkali sink.
c) Seeds
d) June - Oct. (in desert)
e) Seeds ground into meal
f) -
g) Bean & Saubel 1972:135.
Barrows 1900:57

Salix L. spp.
a) Willow
b) Generally along stream banks or moist places in many plant communities.
c) -
d) -
e) -
f) Wood used for making bows. Branches used in basketry and for cradle boards, and house walls and remedies and granaries, woven mats, women's shirts. Leaves may havebbeen used medicinally.
g) Bean & Saubel 1972:135 (Cahuilla)
g Barrows 1900:49, 36, 39 (Cahuilla)
Merrill 1929:239 (Chomash, Cahuilla, Chemehuevi, Mojave)
Sparkman 1908:233, 201 (Luiseno)
Spier 1923:342, 347, 350.
Gifford 1931:19, 21, 27-28, 32-38, 36, 39-40, 45.
Curtis 1926:7, 9, 11 (Luiseno) 25 (Cahuilla) 42, 44 (Diegueno)
Hedges 1966:11 (Diegueno)

Salvia apiana Jeps.
a) White sage
b) Dry benches and slopes mostly below 5000 ft.; c.s.s.; chaparral; yellow pine forest; cismontane.
c) Stalks
Seeds
Leaves
d) July - September
e) Young stalks eaten raw (Diegueno.)
Seeds parched, ground, and used in mush. Leaves were sometimes crushed and used as flavoring.
f) Leaves, eaten, smoked and used in the sweathouse as a cure for colds, leaves crushed and mixed with water used as shampoo. Poultice of leaves used to eliminate B.O. (See Bean & Saubel) Tea used for coughs (La Huerta & Diegueno) & poison oak
Used in pit for girls' adolescence ceremony (Curtis: 46).
g) Bean & Saubel 1972:136.
Sparkman 1908:196,229 (Luiseno)
Hinton 1975:219 (La Huerta Diegueno)
Hedges 1966:28 (Diegueno)
Spier 1923:335
Curtis 1926:43, 46

Salvia carduacea Benth.
a) Thistle sage
b) Sandy and gravelly places below 4500 ft.; C.B.S., C.S.S.; v. grassland, etc.; interior cismontane to W. Mojave Desert.
c) Seeds
d) June - November
e) Seeds parched, ground into flour, & mixed with other seeds for mush.
f) Used to cover hot stones in girls' initiation ceremony (Curtis:46)
g) Bean & Saubel 1972:137
Sparkman 1908:229
Hedges 1966:27 (Diegueno)
Curtis 1926:46 (Diegueno)

Salvia columbariae Benth.
a) Chia
b) Dry open disturbed places below 4000 ft.; occ. to 7000 ft.
C.S.S.; chaparral; C.B.S.; etc.
"Formerly covered many acres...near most Cahuilla villages." The stands were burned over to facilitate the next season's growth (Bean & Saubel 1972:137)
c) Seeds
d) June - September - Bean
(April - July) Munz
e) Seeds were hulled, winnowed, and parched, then ground into meal from which mush or cakes were made. A beverage was made by soaking unground seeds in water. Alkaline water is supposed to be made palatable by adding chia seed.
f) Chia mush was used as a poultice on infections.
g) Bean & Saubel 1972:137
Barrows 1900:64 (Cahuilla)
Sparkman 1908:196, 229 (Luiseno)
Balls 1965:23-25.
Almstedt 1968:10, 12
Kroeber 1925:695 (Cahuilla)
Hedges 1966:27 (Diegueno)
Curtis 1926:7 (Luiseno) 29 (Cahuilla) 43 (Diegueno)

Salvia mellifera Greene.
a) Black sage
b) Common on dry slopes and benches below 2000 ft.
C.S.S.; chaparral;
c) Seeds
Leaves & stalks
d) June - August
April - May
e) Seeds parched and ground into meal. Leaves and stalks were used as food flavoring.
f) -
g) Bean & Saubel 1972:138
Sparkman 1903:229

Sambucus caerulea Raf. [S. glauca]
- a) Elderberry
- b) Open places in mountains; coniferous forest.
- c) Fruit
  Flowers
  Wood
- d) July - Oct. (?)
  June - Sept.
- e) Fruit eaten fresh or dried. Flowers used.
- f) As a remedy for "female complaints." Wood used for making bows.
- g) Sparkman 1908:229, 195.
  Almstedt 1968: 10, 12
  Curtis 1926:8, 43 (Sambucus sp.) (Luiseno, Diegueno)

Sambucus mexicana Presl.
- a) Elderberry
- b) Open flats, cismontane valleys & canyons below 4500 ft.
  C.S.S.; chaparral; S. oak wd.; occ. in desert mts.
- c) Berries
  Blossoms
  Roots
  Twigs
- d) April - Oct. [July - Aug.]
  March - Sept.
  ?
  Year-round
- e) Berries eaten fresh or usually dried and cooked into a rich sauce.
- f) Blossoms were brewed into a tea for use in curing fevers, upset stomachs, colds and flu; also good for feeth and newborn babies.
  Roots boiled in water and used to relieve constipation.
  Juice of berry used for black dye for basket materials. Stem of berry used for yellow or orange dyes. Twigs of elderberry used for making whistles.
- g) Bean & Saubel 1972:138 (Cahuilla)
  Barrows 1900:63-64 (Cahuilla), 42
  Sparkman 1908:195 (Luiseno)
  Merrill 1923:235 (Cahuilla, Diegueno, Luiseno)
  Hedges 1966:41
  Curtis 1926:8 (Sambucus sp.) (Luiseno, Diegueno) 43

Satureja douglasii (Benth.) Briq.
- a) Yerba buena
- b) Shaded woods below 3000 ft.; chaparral, closed-cone pine forest.
- c) Plant
- d) -
- e) -
- f) Plant boiled and drunk for reducing fevers and curing colds.
- g) Bean & Saubel 1972:139. (Cahuilla)
  Sparkman 1908: 21. (Luiseno)

Scirpus L. spp.
a) Bulrush, tule
b) Wet places in many plant communities. Below 7500 ft.
c) Roots
Seeds
Pollen
Stalks
d) All year
Summer
April - Sept. (depending on spp.)
-
e) Roots ground into flour. Seeds eaten raw or ground into mush. Cakes made from pollen. Young shoots eaten raw (Luiseno).
f) Stalks used for bedding, mats, weaving materials, roofing, ceremonial bundles, and in basketry.
g) Bean & Saubel 1972:139
Merrill 1923:236 (Cahuilla)
Sparkman 1908:234 (Luiseno)
Barrows 1900:36

Scrophularis californica C&S
a) Bee plant, figwort
b) Dryish to moist places below 6000 ft.
C.S.S.; chaparral; etc.;
c) Root
d) -
e) -
f) Tea made from roots is drunk to combat fever.
g) Hinton 1968:219 (La Huerta Diegueno)

Sesuvium verrucosum Raf. [S. sessile]
a) Sea - purslane
b) Low, ± saline places; v. grassland, C.S.S., alkalai sink, etc.
c) Seeds (archaeological evidence)
d) May - Dec. ? (Munz)
e) Seeds parched? and eaten?
f) -
g) Wilke, King & Hammond 1975:60-61 (Cahuilla)

Sidalcea malvaeflora (DC) Gray
a) "Wild hollyhock" (Sparkman)
b) Open grassy slopes and mesas at low elevs. L.A. Co. to Mendocino. Sep. dolosa in San Bernardino Mts.
c) Leaves/Young plant
d) Early spring ?
e) Used as greens
f) -
g) Sparkman 1903:231

Simmondsia chinensis (Link) C.K. Schneid.

a) Jojoba; goatnut
b) Dry barren slopes below 5000 ft.; C.B.S., Joshua tree wd., chaparral.
c) Fruit - seeds
d) Year round? [May - July]
e) Seeds eaten fresh or ground into powder from which a drink can be made.
f) -
g) Bean & Saubel 1972:139-140.
Barrows 1900:79.
Balls 1962:33

Sisyrinchium bellum

a) Blue-eyed grass
b) Mostly open grassy places below 3000 ft. Many plant communities.
c) Root
d) -
e) -
f) Purgative made from roots.
g) Sparkman 1908:233 (Luiseno)

Solanum douglasii Dunal

a) Nightcharm
b) Shaded slopes, canyons below 3500 ft.; C.S.S.; chaparral; coastal strand. Cismontane.
c) Leaves
d) Early spring?
e) Leaves used for Greens (Luiseno)
f) Juice used for sore or infected eyes, remedy for eye strain.
Used for tattoos (Luiseno)
g) Bean & Saubel 1972:190 (Cahuilla)
Sparkman 1908:229. (Luiseno)

Solidago californica Nutt.

a) California goldenrod
b) Common to dry or moist fields below 8000 ft. From C.S.S. to yellow pine forest. Cismontane and montane.
c) Plant
d) -
e) -
f) Hair rinse and medicine in feminine hygiene.
g) Bean & Saubel 1972:140. (Cahuilla)

Suaeda Forsk. spp.
- a) Sea-blite, seep-weed
- b) Alkaline and saline places below 5000 ft.
- c) Leaves
  Seeds
- d) April - ?
  June - Oct.
- e) Leaves boiled for greens. Seeds ground into flour for mush or cakes.
- f) Leaves used for hair dye. Used for dyeing basket materials.
- g) Bean & Saubel 1972:141 (Cahuilla)
  Merrill 1923:235 (Cahuilla, Luiseno, Diegueno, Chumash)
  Barrows 1900:42-43, 66 (Cahuilla)

Taraxacum californicum M.&J.
- a) Dandelion
- b) Moist meadows, 6500 - 8300 ft.; yellow pine forest. San Bernardino Mts.
- c) Stems & leaves
- d) March - June (?)
- e) -
- f) -
- g) Bean & Saubel 1972:141

Tauschia arguta (T&G) Macbr.
- a) -
- b) Dry fans and slopes, below 6000 ft., C.S.S., chaparral, etc. Cismontane to desert edge.
- c) Root
- d) -
- e) -
- f) Root "much esteemed" for medicinal purposes.
- g) Sparkman 1903:230. (Luiseno)

Trichostema lanatum Benth.
- a) Wooly blue-curls
- b) Dry slopes, mostly below 4500 ft.; chaparral, coast ranges.
- c) -
- d) -
- e) -
- f) Leaves and flowers boiled into a tea for stomach ailments.
- g) Bean & Saubel 1972:141 (Cahuilla)

Trifolium L. spp.
a) Clover
b) Many plant communities below 9500 ft.
c) Leaves
Seeds
d) Feb. - Aug.
April - Oct.
e) Leaves eaten as greens. Seeds ground for mush (some spp., . Greens eaten fresh or cooked.
f) -
g) Bean & Saubel 1972:141-142.
Sparkman 1908:231
Hedges 1966:32

Turricula parryi (Gray) Macbr. [Eriodyctyon parryi]
a) Yerba santa
b) Dry places, especially on burns, 1000 - 8000 ft.
Chaparral, yellow pine forest.
c) -
d) -
e) -
f) Used for medicinal purposes. Decoction used for colds and coughs (Diegueno)
g) Sparkman 1908:230 (Luiseno)
Hedges 1966:24 (Diegueno)

Typha latifolia l.
a) Cat-tail
b) Freshwater marsh below 5000 ft.
c) Roots
Pollen
Stalks
d) Year round?
June - July
Year round
e) Roots dried and ground into meal. Pollen used to make cakes and mush. Young sprouts eaten (Curtis).
f) Roots used to heal bleeding wounds.
Stalks used as matting materials, bedding.
g) Bean & Saubel 1972:142-143.
Balls 1962:32-33
Curtis 1926:43

Umbellularia californica (H&A) Nutt.

a) California-bay, -laurel
b) Canyons and valleys below 5000 ft.; chaparral, foothill wd., yellow pine forest, etc.
c) -
d) -
e) -
f) Leaves used to cure headaches
g) Bean & Saubel 1972:143 (Cahuilla)
   Palmer 1878:652
   Balls 1962:16-17 (See ms)
   Balls 1965:15
h) Balls 1965 notes use as food - nuts parched and eaten whole or ground.

Urtica holosericea Nutt.

a) Nettle
b) Low damp places below 9000 ft.; many communities Cismontane; occasional on desert edge.
c) Leaves
   Stems
d) Year-round?
e) Leaves eaten raw (?) or boiled as greens. (Cahuilla)
f) Fiber used to make bowstrings and baskets - nets.
   Used to cure rheumatism and muscular stiffness.
g) Bean & Saubel 1972:143
   Sparkman 1908:233, 202
   Hedges 1966:37
   Curtis 1926:10, 129 (Luiseno)

Viola pedunculata T&G.

a) Johnny jump-up
b) Grassy places below 2500 ft.; v. grassland C.S.S.
c) Leaves
d) Perennial
e) Leaves used as greens, after boiling
f) -
g) Sparkman 1908:230
   Hedges 1966:19

Vitis girdiana Munson.

a) Wild grape
b) Canyon bottoms, along streams below 4000 ft.
   S. oak wd.; C.S.S.; occ. on desert edge.
c) Grapes
d) June - August
e) Eaten fresh; cooked in stews and dried as raisins.
f) Sap rubbed on thin hair to make it grow (Diegueno).
g) Bean & Saubel 1972:144.
   Sparkman 1908:231, 195
   Hedges 1966:38

Washingtonia filifera (Lindl.) Wendl.
- a) California fan palm
- b) Groves in moist alkaline places around seeps, streams, springs, below 3500 ft.; C.B.S.; W & N edge of Colorado Desert.
- c) Fruit
  Pith
  Leaf base
  Leaves
- d) June - Nov. (?)
  Year round
- e) Fruit eaten fresh or dried & stored. Both flesh and seeds ground into flour for mush.
- f) Fronds used for house construction, cooking utensils, used for baskets, sandals. Stems used in fire-drills.
- g) Bean & Saubel 1972:145-149.
  Barrows 1900:38, 48
  Curtis 1926:162
  Bean & Saubel 1961:243
  Merrill 1923:238 (Cahuilla, Luiseno)

Woodwardia fimbriata sm.*
- a) Chain fern [W. radicans]
- b) Springy and boggy places in canyons below 5000 ft. Many plant communities.
- c) Root
- d) -
- e) -
- f) Decoction of root used externally and internally to relieve pain from injuries.
- g) Sparkman 1908:234 (Luiseno)

*I.D. not definite

Yucca baccata Torr.
- a) Yucca
- b) Dry slopes 3000 - 5000 ft. J.T. wd.
- c) Blossoms
  Fruit
- d) April - June
- e) Blossoms boiled and eaten or dried
  Fruits roasted and eaten
- f) Scraped root used for soap.
- g) Bean & Saubel 1972:150, 153.
  Palmer 1871:418
  Balls 1962:44-47
  Barrows 1900:48

Yucca brevifolia Engelm.
a) Joshua tree
b) Dry areas and slopes 2000 - 6000 ft. J.-T. wd.
c) Blossoms
Leaves
d) March - May
e) Blossoms boiled
f) Fibers used for cordage to make sandals and nets. Inner root used in basketry.
g) Bean & Saubel 1972:153 (Cahuilla)
Balls 1962

Yucca schidigera Roezl.
a) Mojave yucca
b) Dry rocky slopes and mesas, below 5000 - 7500 ft.
Chaparral, C.B.S.
c) Fruit pods
Leaves
Roots
d) April - May
-
-
e) Pods eaten raw, but usually roasted.
f) Roots scraped and mashed for soap.
Fiber used for bowstrings, netting, brushes, baskets, string, mats, sandals. Leaf strands used to bind house parts.
g) Bean & Saubel 1972:150-153. (Cahuilla)
Balls 1962:44-47.
Sparkman 1908:195, 200, 203, 234. (Luiseno)
Barrows 1900: 36, 47, 48, 59 (Cahuilla)
Joël 1976:61-62
Kroeber 1925:695 (Cahuilla) 722 (Diegueno)
Merrill 1923:238 (S. Calif.)

Yucca whipplei Torr.
a) Our lord's candle
b) Dry slopes up to 8000 ft.; C.S.S.; C.B.S.; J.-T. wd.; P.-J. wd.; chaparral; yellow pine forest.
c) Flowers
Flowering stalk
d) April - May
March - May
e) Stalk roasted, then dried, ground and mixed with water to form cakes. Or sliced, parboiled and cooked like squash. Flowers parboiled and eaten or dried.
f) Occ. used for fiber, used in house construction.
g) Bean & Saubel 1972:150-153 (Cahuilla)
Barrows 1972:50, 59, 66 (Cahuilla)
Balls 1962:45
Sparkman 1908:234, 195, 200, 203. (Luiseno)
Almstedt 1968:10, 11 (Diegueno)
Hedges 1966:43-44 (Diegueno)
Spier 1923:338.
Curtis 1926:8 (Luiseno)

APPENDIX E

ETHNOZOOLOGICAL REFERENCES

The following appendix was compiled using data from available ethnographic sources. In comparison with ethnobotanical data, ethnozoological information is scant and very general.

KEY

Scientific Name
a) The common name(s)
b) Location - the range of distribution
c) Method of hunting the animal
d) How the animal was cooked
e) Use of the animal other than for food (i.e. ceremonial, fur, etc.)
f) References
g) Additional notes

- Means the information could not be located.

ACCIPITRIDAE
a) Hawks, kites and eagles
b) Grassland, coniferous forest, chaparral, oak wd. riparian, freshwater marsh.
c) Eagles not eaten by Luiseno (Kroeber)
d) -
e) Hawk feathers used for arrow fletching (Curtis:25) Eagles were killed ceremonially by Luiseno, Diegueno
f) Bean 1972:60 (Cahuilla)
Almstedt 1968:14 (Diegueno)
Curtis 1926:25 (Cahuilla)
Kroeber 1925:642, 676 (Luiseno)
Sparkman 1929:177 (Cahuilla) 261 (Luiseno)
Strong 1929:83, 120, 177-79 (Cahuilla)
1929:261-2 (Luiseno)
1929:307-309 (Luiseno)

ACRIDIDAE
a) Grasshoppers
b) Throughout
c) Driven into a pit while in the wingless stage. Fire was thrown in, grasshoppers roasted.
d) -
e) -
f) Bean 1972:61 (Cahuilla)
Almstedt 1968:14 (Diegueno)
Kroeber 1925:652 (Luiseno)
Sparkman 1908:199 (Luiseno)

Ammospermophilus leucurus

a) Antelope ground squirrel
b) Rocky, gravelly soils in desert regions.
c) -
d) -
e) -
f) -

ANATIDAE

a) Geese and ducks
b) Freshwater marsh, saltwater
c) -
d) -
e) -
f) Bean 1972:60 (Cahuilla)
Almstedt 1968:14 (Diegueno)
Kroeber 1925:652 (Luiseno)
Sparkman 1908:199 (Luiseno)

Antilocarpa americana

a) Pronghorn
b) Formerly in open plains and grasslands
c) -
d) -
e) -
f) Bean 1972:57-58 (Cahuilla)
Curtis 1926:23 (Cahuilla)
Curtis 1926:42 (Diegueno)
Almstedt 1962:11 (Diegueno)
Sparkman 1908:197 (Luiseno)

Canis latrans

a) Coyote
b) Throughout
c) Not eaten by Diegueno (Almstedt 1968:14)
Not eaten by Luiseno (Kroeber)
Eaten by Gabrielino (Kroeber)
d) -
e) -
f) Bean 1972:63 (Cahuilla)
Almstedt 1963:14 (Diegueno)
Kroeber 1925:652 (Luiseno) 631 (Gabrielino)

CICADIDAE

a) Cicadas
b) Throughout
c) -
d) -
e) -
f) Bean 1972:61 (Cahuilla)

Citellus-tereticaudus
a) Round-tailed ground squirrel
b) Desert regions
c) -
d) -
e) -
f) Bean 1972:60 (Cahuilla)
Curtis 1926:8 (Luiseno)

Crotalus spp.
a) Rattlesnake
b) Some sp. occurs in most ecosystems, from desert to coniferous forest.
c) Rattlesnakes (not others) considered "human" by Diegueno and were not eaten except by old people (Almstedt). Eaten by Gabrielino (Kroeber). Eaten by Diegueno (Lee).
d) -
e) Rattles used on ceremonial objects (Luiseno-Kroeber)
f) Bean 1972:61 (Cahuilla)
Almstedt 1968:14 (Diegueno)
Kroeber 1925:631 (Gabrielino) 665 (Luiseno)
Lee

Didelphis marsupialis
a) Oppossum
b) -
c) -
d) -
e) -
f) -

Dipodomys spp.
a) Kangaroo rats
b) C.S.S. and desert regions
c) -
d) -
e) -
f) Bean 1972:58 (Cahuilla)

Eutamias merriami
a) Merriam chipmunk
b) Chaparral and forest
c) -
d) -
e) -
f) Bean 1972:60 (Cahuilla)

LACERTILIA
a) Lizards
b) Some lizard spp. occur in most ecosystems.
c) Lizards not eaten by Luiseno (Kroeber)
d) -
e) -
f) Bean 1972:61 (Cahuilla)
Curtis 1926:23
Kroeber 1925:652

LEPIDOPTERA
a) Moth larvae
b) ?
c) Larvae collected and eaten
d) -
e) -
f) Bean 1972:61 (Cahuilla)

Lepis californicus
a) Blacktail jack rabbit
b) -
c) -
d) -
e) -
f) Bean 1972:59 (Cahuilla)
Curtis 1926:8 (Luiseno) No sp. given.
Almstedt 1968:11 (Diegueno) No sp. given.
Kroeber 1925:682 (Luiseno)
Sparkman 1908:197 (Luiseno)

Lophortyx californicus & L. gambelii
a) Quail (California & Gambel's)
b) Chaparral, C.S.S. & L. californicus
Desert scrub - L. Gambellii
c) Quail
d) -
e) -
f) Bean 1972:61 (Cahuilla)
Curtis 1926:42 (Diegueno
Almstedt 1968:14 (Diegueno)
Kroeber 1925:652 (Luiseno)
Sparkman 1908:199 (Luiseno)

Lynx rufus
a) Bobcat, wildcat
b) -
c) Wildcat not eaten by Dieguneo, except for old people "who are... going to die soon anyway." Considered tipay or "human" (Almstedt)
d) -
e) -
f) Bean 1972:63 (Cahuilla)
Curtis 1926:23
Curtis 1926:42 (Diegueno)
Curtis 1926:8 (Luiseno)
Almstedt 1968:14 (Diegueno)

*
a) Mussells
b) -
c) -
d) -
e) -
f) Sparkman 1908:198 (Luiseno)

Mephitis mephitis
a) Striped skunk
b) All areas except desert and high mountains
c) Skunks considered tipay ("human") by Diegueno, and were not eaten (Almstedt)
d) -
e) -
f) Bean 1972:63 (Cahuilla)
Almstedt 1968:14 (Diegueno)

Neotoma albugilia
a) White-throated woodrat
b) Desert region
c) Taken in a trap of two stones held apart by a short stick on an acorn.
d) -
e) -
f) Bean 1970:59-60 (Cahuilla)
Kroeber 1925:652 (Luiseno)

Neotoma fuscipes
a) Dusky-footed woodrat
b) Chaparral
c) Taken in trap of two stones held apart by a short stick on an acorn.
d) -
e) -
f) Bean 1972:59-60 (Cahuilla)
Almstedt 1968:11 (Diegueno) No specific name given.
Sparkman 1908:198 (Luiseno) No specific name given.
Kroeber 1925:652 No specific name given.

Neotoma lepida
- a) Desert woodrat
- b) Throughout
- c) Trapped with acorns for bait, nests set fire; as the animals came out they were shot with bow and arrow (Almstedt).
- d) -
- e) -
- f) Bean 1972:59-60 (Cahuilla)
  Kroeber 1925:652 (Luiseno)
  Sparkman 1908:198 (Luiseno) No sp. name given

Odocoileus hemionus
- a) Mule deer
- b) Chaparral, forest, C.S.S.
- c) -
- d) -
- e) -
- f) Bean 1972:57 (Cahuilla)
  Curtis 1926:23 (Cahuilla)
  Almstedt 1968:11,14 (Diegueno)
  Kroeber 1925:652 (Luiseno)
  Sparkman 1929:48 (Cahuilla) 115
  Strong 1929:115,77 (Cahuilla)
- g) Deer hunted often in conjunction with the acorn harvest. Could be hunted in any locality (Cahuilla - Sparkman)

Otospermophilus beecheyi
- a) California ground squirrel
- b) C.S.S.; grassland; oak woodland, chaparral.
- c) -
- d) -
- e) -
- f) Kroeber 1925:652 (Luiseno)
  Sparkman 1908:198 (Luiseno)

Ovis canadensis
- a) Mountain sheep, bighorn sheep
- b) Rocky terrain in desert mountains
- c) -
- d) -
- e) -
- f) Bean 1972:57-58 (Cahuilla)
  Curtis 1926:9 (Luiseno)
  Curtis 1926:23 (Cahuilla)
  Curtis 1926:42 (Diegueno)
  Sparkman 1929:48 (Cahuilla)
  Barrows 1908:27 (Cahuilla)
- g) Could be hunted in any locality

Perognathus spp.
a) Pocket mouse
b) Chaparral, forest, desert regions
c) Trapped
d) -
e) -
f) Bean 1972:59-60
Kroeber 1925:652 (Luiseno)

Peromyscus spp.
a) Mouse
b) Throughout - several spp.
c) Trapped
d) -
e) -
f) Bean 1972:59-60 (Cahuilla)
Curtis 1926:8 (Luiseno)
Kroeber 1925:652 (Luiseno)

Procyon lotor
a) Raccoon
b) Most areas except desert
c) -
d) -
e) -
f) Bean 1972:63 (Cahuilla)

SALMONIDAE
a) Trout
b) Mountain streams and small lakes
c) Taken by poisoning or with dip nets.
d) -
e) -
f) Curtis 1926:24 (Cahuilla)
Curtis 1926:9 (Luiseno)
Bean 1972:62 (Cahuilla)
Kroeber 1926:652 (Luiseno)
Sparkman 1908:200 (Luiseno)

SAUROMAULUS OBESUS
a) Chuckwalla
b) Desert scrub
c) -
d) -
e) -
f) Bean 1972:61 (Cahuilla)

Sciurus griseus
a) Western gray squirrel
b) Oak woodland
c) Not hunted by Diegueno, considered "human" (Almstedt)
Not eaten by Luiseno (Kroeber)
d) -
e) -
f) Bean 1972:60 (Cahuilla)
Almstedt 1968:14 (Diegueno)
Kroeber 1925:652 (Luiseno)

*
a) Shellfish
b) -
c) -
d) -
e) -
f) Curtis 1926:9 (Luiseno)
Kroeber 1925:652 (Luiseno)

Spilogale putoris
a) Spotted skunk
b) Rocky, brushy places; not in desert.
c) Skunks were tipay ("human") and not eaten by Diegueno (Almstedt)
d) -
e) -
f) Bean 1972:63 (Cahuilla)
Almstedt 1968:14 (Diegueno)

Sylvilagus audubonii
a) Desert cottontail
b) Throughout
c) -
d) -
e) Skins used for rabbitskin robes.
f) Bean 1972:59 (Cahuilla)
Almstedt 1968:11 (Diegueno) No sp. given
Curtis 1926 (see S. bachmanii) No sp. name given
Kroeber 1965:652 (Luiseno) No sp. name given.
Sparkman 1929:48 (Cahuilla) No sp. name given.
Sparkman 1908:198 (Luiseno)
g) Rabbits could be hunted in any locality

Sylvilabus bachmani
a) Brush rabbit
b) Chaparral
c) -
d) -
e) Skins used for fur robes
f) Curtis 1926:8, 159 (Luiseno) 23, 162 (Cahuilla)
42, 166 (Diegueno) No sp. given.
Almstedt 1963:11 (Diegueno) No sp. given.
Bean 1972:59 (Cahuilla)
Kroeber 1925:652 (Luiseno)

Urocyon cinereorgenteus
a) Gray fox
b) Most areas below forest except warm arid desert
c) Not hunted, considered "human" by Diegueno (Almstedt)
d) -
e) -
f) Bean 1972:63
Almstedt 1968:14 (Diegueno)

Ursus spp.
a) Black bear
b) Mountains
c) Not eaten by Luiseno (Kroeber)
d) -
e) -
f) Curtis 1926:23 (Cahuilla)
:42 (Diegueno)
:8 (Luiseno)
Kroeber 1925:652 (Luiseno)
Strong 1929:116 (Cahuilla)

Vulpes marcrotis
a) Kit fox
b) C.S.S., desert regions
c) Foxes considered "human" by Diegueno, not hunted (Almstedt).
d) -
e) -
f) Bean 1972:63 (Cahuilla)
Almstedt 1968:14 (Diegueno)

APPENDIX F

NATIVE AMERICAN VILLAGES AND ASSOCIATED SITES

These sites have been mapped on the BLM USGS maps. Their location have been obtained from several sources: plat maps on file at the Map Information Center, Department of Transportation, San Diego County Operations Center and at the BLM, Riverside District Office; maps prepared by Carrico (1974); and other sources, as indicated. A number of village locations identified by Carrico have been determined based upon a research of documents and conversations with Native Americans. Many of the locations have not been checked in the field. The numbers given below are Carrico's.

Spelling is approximated.

Location			
Township	Range	Name (if given)	Source
8S	IE	Indian Houses	Plat Map, 1878
9S	2W	Pala (# 35)	Carrico, 1974
9S	2W	Indian Huts (# N)	Carrico, 1974
9S	2W	Indian Rancheria (# M)	Carrico, 1974
9S	IE	Indian Rancheria	Sutton, 1965
9S	2E	Ahuanga (# 74)	Carrico, 1974
10S	IW	Pauma (# 75)	Carrico, 1974
10S	IW	Indian Schoolhouse (# Q)	Carrico, 1974
10S	IW	Pu-chorivo (# 46)	Carrico, 1974
10S	IW	Woshha (# 45)	Carrico, 1974
10S	W	Indian's House (# P)	Carrico, 1974
10S	2W	Tomka, Tomkav (# 36)	Carrico, 1974
10S	2W	?Pacuei (# 79)	Carrico, 1974
10S	IE	Indian Rancheria	Plat Map, 1886
10S	IE	Indian Houses	Plat Map, 1886

APPENDIX F (continued)

Location Township	Range	Name (if given)	Source
10S	1E	Potrero (Cuca)	Plat Map, 1886
10S	1E	La Picha	Sutton, 1965
10S	1E	Huyulkum (# 77)	Carrico, 1974
10S	1E	La Joya	Plat Map, 1886
10S	1E	Kulaumai (# 65)	Carrico, 1974
10S	2E	Puerta (# 73)	Carrico, 1974
10S	3E	La Puerta de la Cruz	Plat Map, 1855-6 Field Notes
10S	3E	Cupa (Agua Caliente)	Plat Map, 1885-5 Field Notes
10S	4E	Alima (#63)	Carrico, 1974
10S	4E	San Ignacio	Plat Map, 1910
10S	4E	Cultivated land	Plat Map, 1910
10S	4E	San Ysidro	Plat Map, 1910
10S	4E	Cultivated Land	Plat Map, 1910
11S	1W	?Asumai (# 76)	Carrico, 1974
11S	1E	Caulamai- Paulima (# 78)	Carrico, 1974
11S	2E	Old Indian Rancheria	Plat Map, 1886
11S	2E	Indian Rancheria (San Jose)	Plat Map, 1886
11S	2E	Indian Rancheria	Plat Map, 1886
11S	2E	Tocomac, Tukumac (# 72)	Carrico, 1974
(same as above)		Indian Rancheria	Plat Map, 1886
11S	3E	Tah-wee (# 70)	Carrico, 1974

APPENDIX F (continued)

Location Township	Range	Name (if given)	Source
11S	3E	San Felipe (# 64)	Carrico, 1974
11S	3E	Mataguai, Matajua (#69)	Carrico, 1974
12S	1W	San Pasqual	Rustvold, 1974
12S	1E	Ahmukatkatl	Carrico, 1974
12S	3E	Indian Rancheria	Plat Map, Rancho Santa Ysabel, 1869
12S	3E	?Ah-ha-hew-a-mac (# 53)	Carrico, 1974
12S	4E	Indian Rancheria	Plat Map, Rancho San Felipe, 1858
12S	4E	Mel-co-to-mac	Carrico, 1974
12S	5E	Indian Rancheria	Plat Map, Rancho Felipe, 1858
12S	6E	Vallecitos (# 62; at stage station site)	Carrico, 1974
13S	2W	Sinyau-pichkara (# 31)	Carrico, 1974
13S	2W	Hapai (# 32)	Carrico, 1974
13S	3E	Cusmich, Jusmit... (# 26)	Carrico, 1974
13S	3E	Ainahuac (# 27)	Carrico, 1974
13S	3E	Indian Rancheria	Plat Map, 1876
14S	2W	Pawai (Poway; # 34)	Carrico, 1974
14S	1E	Queptehua (# 89)	Carrico, 1974
14S	2-3E	Capitan Grande (# 88)	Carrico, 1974
14S	4E	Hual-cu-cish (# 84)	Carrico, 1974
14S	4E	? (# 80)	Carrico, 1974
14S	4E	Pisdim (# 83)	Carrico, 1974

APPENDIX F (continued)

Location Township	Range	Name (if given)	Source
14S	4E	Mataragui (# 55)	Carrico, 1974
14S	4E	Pilcha (# 81)	Carrico, 1974
14S	4E	Indian Rancheria	Plat Map, 1874
14S	5E	Mat-nook (# 67)	Carrico, 1974
14S	5E	Indian Cemetery	Plat Map, 1945
15S	2E	Equilsh Amahk (# 57)	Carrico, 1974
15S	3-4E	Walt-ti' (# 56)	Carrico, 1974
15S	4E	Summer village (# 82)	Carrico, 1974
15S	4E	Old Indian Rancheria (Samataryuma)	Plat Map, Rancho Cuyamaca, 1874
15S	4E	Guati, Kwatai, Wah-ti (# 23)	Carrico, 1974
16S	1E	Sycuan, Sekwan, Sak-kwahn (# 22)	Carrico, 1974
16S	1E	Matamo (# 20)	Carrico, 1974
16S	1E	Jamacha (# 19)	Carrico, 1974
16S	7E	Hapawu (ahta) (# 85)	Carrico, 1974
17S	1E	Jamul (# 21)	Carrico, 1974
17S	5E	Indian Huts (# A)	Carrico, 1974
17S	1W	Otay (# 15)	Carrico, 1974
18S	5E	? (# 60)	Carrico, 1974
18S	6E	Indian Trail (# B)	Carrico, 1974
18S	8E	Hacoom (Jacumba) (# 67)	Carrico, 1974

APPENDIX G

POST OFFICES, BLM STUDY AREAS

Source: Frickstadt (1955); United Postal Service (1978)
Explanation: for each post office, the following information is presented: date of establishment; date of discontinuation, transfer or name change; forwarding location or new name; and study area location. An asterick (*) indicates that the post office did not operate continuously between the given dates. "P" indicates that the post office is still in operation.

Date of Establishment	Date of Discontinuation, Transfer or Name Change	Study Area 1	Study Area 2	Study Area 3
10/18/1859	10/7/1875*			Warner's Ranch
6/10/1868	3/19/1875	Milguatay (Campo area)		
6/2/1870	P		Poway	
9/19/1870	8/31/1900 Bergman			Oak Grove
7/27/1870	8/30/1902* Witch Creek		Ballena	
8/8/1870	P			Julian
9/ 23/1870	P	Campo		
12/3/1872	12/28/1906 Excondido	Bernardo		
7/29/1873	12/28/1906* Julian			Banner
9/1/1874	2/9/1901* Escondido	San Pasqual		
10/22/1874	P		Valley (Valley Center)	
5/13/1875	P		Pala	
5/4/1876	P	Potrero		

APPENDIX G (continued)

Date of Establishment	Date of Discontinuation, Transfer or Name Change	Study Area 1	Study Area 2	Study Area 3
5/4/1876	9/22/1880	Janal		
4/17/1878	3/25/1893* Campo			Homestead
6/7/1878	10/5/1878		Atkinson (Lakeside Area)	
9/22/1880	P	Jamul		
2/17/1881	4/24/1884 Escondido		Apex	
4/8/1881	P			Warner (Springs)
9/24/1883	6/18/1895* Ramona		Nuevo	
4/9/1884	10/9/1888 Pala	Agua (Aqua) Tibia		
4/24/1884	P	Excondido		
12/1/1884	12/30/1922 Excondido	Vineyard		
4/29/1886	12/22/1890 Pala		Cota	
11/12/1886	P		Ramona	
12/22/1886	P	Dulzura		
6/12/1889	P			Santa Ysabel
1/2/1889	2/28/1905 Poway		Howe	
11/27/1889	7/31/1914 Fall Brook		Rainbow	
8/11/1890	10/31/1900 Merton		Virginia (Poway area)	

APPENDIX G (continued)

Date of Establishment	Date of Discontinuation, Transfer or Name Change	Study Area 1	Study Area 2	Study Area 3
3/3/1893	3/15/1938*	Lawson Valley		
7/10/1890	8/30/1902 Poway		Merton	
3/3/1893	3/15/1938 Excondido		Witch Creek	
4/18/1893	7/15/1901* Escondido		Silvano	
4/18/1893	12/23/1906 Lakeside		Foster	
9/15/1894	10/11/1901 Aguanga			Bergman
3/22/1895	10/31/1903 Ramona		Sutherland	
6/17/1895	8/20/1895 Jamacha	Daviston		
8/20/1895	7/31/1922 Jamal (Jamul?)	Jamacha		
5/16/1896	2/15/1914 Ramona		Almond	
5/5/1898	5/31/1912 Valley Center		Lilac	
10/11/1901	P			Aguanga
11/19/1909	P	Boulevard		
5/20/1910	8/31/1911 Excondido		Soboyame	
4/16/1912	P	Tecate		
9/11/1913	6/30/1931 Julian			Pine Hills

APPENDIX G (continued)

Date of Establishment	Date of Discontinuation, Transfer or Name Change	Study Area 1	Study Area 2	Study Area 3
2/4/1915	10/15/1936 Dulzura	Barrett		
4/2/1915	P	Jacumba		
9/22/1917	2/27/1926 Warner Springs			Verruga
8/13/1924	10/15/1926 Escondido			Lake Hodges
5/29/1920	8/15/1922 Barrett	Barrett Dam		
8/4/1920	11/1/1930 Mount Laguna			Resort
11/30/1930	P			Mount Laguna
2/16/1933	1/31/1935 Escondido		Jesmond Dene	
11/12/1935	P			Ranchita
9/1/1951	P			Pauma Valley

Analysis
The establishment of post offices in the BLM study areas reflects important historical patterns.

That the earliest post office was established at Warner's Ranch was due to the importance of the Butterfield-Southern Emigrant Route; Oak Grove, established in 1870, was also located on this route. Milguatay, the second post office to be established in inland San Diego County, was located on the road to Yuma, the other important transportation route. Between 1870 and 1875, five post offices were established in the Inland Valley study area. This reflects the favorability of this area for early agricultural development. The post office at the mining town of Julian was established some six months after the first lode mines were discovered. The post office established at Campo in 1870 reflects the early importance of this cattle ranching center.

Table II also reflects the degree of permanence of certain settlements. Unlike Julian, the community of Banner did not survive much beyond the beginning of the twentieth century; its post office was transferred to Julian in 1906. The post office of three late nineteenth century communities, Ballena, San Pasqual and Bernardo, were transferred to other locations during the twentieth century, reflecting their decline. Several twentieth century towns were relatively temporary. For example, the post office at the mining town of Verruga (near Montezuma Mine, SA3) lasted only between 1917 and 1926; the post office at Lake Hodges (SA3) lasted only while the dam was being constructed.

In the twentieth century post offices have been established at the resort towns of the McCain Valley study area, Jacumba (1915) and Resort (Mt. Laguna, 1920).

Table II can be used in conjuction with the historical overview and Table I (San Diego County Population) to plot some of the settlement patterns of the inland San Diego County.

APPENDIX H

SAN DIEGO COUNTY POPULATION, 1870-1950

Appendix H has been compiled from the federal census reports of 1870-1950 (United States Bureau of the Census, 1872 - 1852).

The following items are tabulated:

1. San Diego County: this is the total county population. Up until 1890 this included the population of portions of Riverside County, which was organized as a separate entity in 1893; until 1907, San Diego County also included the whole of Imperial County.

2. Imperial County: this is the population of Imperial County, which was recorded as part of San Diego County's until the census of 1900.

3. Riverside County: this is the population of the portions of Riverside County that were recorded as part of San Diego County's until the census of 1890.

4. Present-Day San Diego County: in order to make the county population figures comparable over time, the population of portions of Riverside and of all of Imperial County have been subtracted from the San Diego County figure. This corrects errors made in the literature (e.g., Griffin, 1976: 63; Pourade, 1964, IV:121) concerning the growth of the San Diego County population between 1890 and 1910.

5. San Diego Bay Area: this can be considered the urban center of San Diego County. It includes the population of the areas surrounding San Diego Bay, namely those of the townships of Chula Vista, Coronado, El Cajon (1880-1910), El Cajon City (1920-1950), Homeland, Lakeside, La Mesa, Lemon Grove, Linda Vista, National City, Palm, Paradise, San Diego, Spring Valley and Tia Juana.

6. Non-San Diego Bay County: this is the population of the county excluding the population of the San Diego Bay area (item #5). At least until 1940, this can be considered the rural portion of the population of San Diego County.

7. North County Coastal Area: this is the population of the north county coastal communities, including Del Mar, Encinitas, Fallbrook, Oceanside, San Luis Rey, South Oceanside and Vista townships. These have been tabulated for comparison purposes.

8. Study Area #1: this includes the population of Campo, Jamul, Dulzura, Potrero and Cottonwood townships. After 1920, these were not separately listed in the census reports.

9. Study Area #2: this includes the population of Ballena, Escondido, Guejito, Lakeside Farms, Moreno, Poway, Ramona, San Pasqual and Valley Center townships; and that of the La Jolla, Pauma and Rincon Reservations.

10. Escondido City: this is the population of the city of Escondido, which was recorded beginning in 1890.

11. Study Area #3: this includes the population of Aguanga, Banner, Julian, Jacumba, Oak Grove and Warner townships.

12. BLM Total: this is the sum of the population of Study Areas #s 1, 2 and 3. After 1920, they are underestimated because of incomplete data.

Discussion

For various reasons, Table I is intended only as a rough guide to the analysis of settlement patterns in inland San Diego County. The earliest census figures are not entirely reliable. In some cases, the figures presented in Table I are approximations. The boundaries of certain townships can no longer be identified; in other cases they were not wholly within a given study area. Figures for certain townships were not broken down in later census reports. The decennial census figures of course do not reflect minor population surges (e.g., the population boom at Julian during the early 1870s). Table I nevertheless does point to certain significant demographic trends.

It is evident that the Inland Valley areas has been the most populous of the BLM study areas. This has always been a favorable agricultural areas, where pastures, farms and orchards have been located ever since the mission period. Its high population is also a reflection of the fact that it was served by railroad spurs after 1888.

Up until 1910 the BLM study areas' population growth generally reflected the growth of the county as a whole. There were significant increases during the 1870s and 1880s; slow growth during the 1890s, when drought and financial failures prevailed; and growth again during the first decade of the twentieth century. Later in the twentieth century, however, the rise in the population of the inland county areas was generally less than that of the county as a whole. This trend seems to reflect the increased employment opportunities that World War I brought to the coastal areas of the county, the development of north county irrigation districts during the 1920s, and the post-World War II residential boom of the north county coastal communities.

In conjunction with other data--raw census data; dates of the establishment of post offices (Table II); voting records; homestead patents; rainfall data—these population figures can be used to identify demographic patterns important to the history of inland San Diego County. Of particular interest are the occupational profiles of specific areas; the "turnover rate" among farmers, ranchers and homesteaders; the relation between urban and rural populations; the relation between rainfall and population; the effect of depressions; and so on.

APPENDIX H (continued)

SAN DIEGO COUNTY POPULATION, 1870-1950**

	1870	1880	1890	1900	1910	1920	1930	1940	1950
San Diego County	3,142	8,618	34,987	35,090	61,665	112,248	209,659	289,348	536,808
Imperial County	N.A.	581	401*	1,549	-	-	-	-	-
Riverside County	232	402	3,585*	-	-	-	-	-	-
Present Day-San Diego County	2,910	7,635	31,001*	33,541	61,665	112,248	209,659	289,348	536,808
San Diego Bay Area	2,300	3,695	19,252	20,432	45,954	98,417	185,382	241,356	435,476
Non-San Diego Bay Area	610	3,940	11,749	13,109	15,711	13,831	24,277	47,992	121,332
North County Coastal	345	708	1,966	2,092	3,214	3,905	11,419	16,757	67,257
Otay-Hauser Mountain Study Area	N.A.	586	829*	555	1,057	N.A.	N.A.	N.A.	N.A.
Inland Valley Study Area	275	1,542	3,285	2,912	6,168	6,818	7,285	12,871	20,007

APPENDIX H (continued)

	1870	1880	1890	1900	1910	1920	1930	1940	1950
Escondido City	-	-	541	755	1,334	1,789	3,421	4,560	6,540
McCain Valley Study Area	N.A.	N.A.	877	1,143	608	N.A.	1,157+	1,214+	1,526+
BLM Total*	275	2,128	4,991*	4,610	7,833	6,818+	8,442+	14,085+	21,533+

Notes: **See Explanation for methods and limitations.
* Estimated
+ Underestimated because of incomplete data.
N.A. Not given in the census report.
Source: 9th - 17th United States censuses.

APPENDIX I

SAN DIEGO COUNTY RADIOCARBON DATES

DATE (BP)	SITE DESIGNATION	LAT/LONG LOCATION	SPEC. NO.	TYPE OF SPECIMEN
Modern	San Jose del Valle	33°13'N 116°45'W	LJ 2591	Charcoal Pit 1
Modern	San Jose del Valle-3	33°13'N 116°45'W	LJ 2589	Charcoal Pit 10
100±150	Presidio Site, San Diego, CA	32°45'34"N, 117°11'38"W	LJ 223	Pismo Clam (Tivela Stultorum)
L 200	Clark Dry Lake, CA	33°19.7'N 116°15.8'W	LJ-17	Charcoal from Hearth-Sandy Soil
250±90	San Jose del Valle-1	33°13'N, 116°45'W	LJ 2584	Carbonized String (30 cm)
270±150	Silver Strand, Coronado, CA-1	32°37'29"N 117°08'09"W	LJ 210	Pismo Clam Shell-Surface of Midden
290±90	San Jose del Valle-2	33°13'N 116°45'W	LJ 2587	Charcoal (Bark Wood) (80 cm)
305±150	Silver Strand, Coronado, CA-4 (Rancho Carrillo Site)	32°37'29"N, 117°08'11"W	LJ 592	Pismo Clam-Pit
320±90	San Jose del Valle-4	33°13'N 116°45'W	LJ 2590	Charcoal-Pit 12
340±50	La Jollan Sweat House	33°1'45"N, 117°15'30"1W	LJ 1994	Deepest Layer
360±120	Witch Creek Site, CA	33°03'N, 116°43'W	LJ 897	Charcoal from Funerary Olla
460±150	Silver Strand, Coronado, CA-6	32°37'29"N, 117°08'11"W	LJ 600	Charcoal Pit (90-108 cm)
570±100	Silver Strand, Coronado, CA-8	32°37'29"N 117°08'11"W	LJ 1376	Pismo Clam
580±200 BP	La Jolla Canyon, San Diego-1		W 154	

APPENDIX I (Continued)

SAN DIEGO COUNTY RADIOCARBON DATES

DATE (BP)	SITE DESIGNATION	LAT/LONG LOCATION	SPEC. NO.	TYPE OF SPECIMEN
580±200 BP	Bluff Deposit-S10 Estate Site, CA			Shell-Upper Portion of Alluvium
600±200	La Jolla Canyon, San Diego-2		W 155	
600±200 BP	Bluff Deposit-S10 Estates Site, CA			Charcoal-Upper Portion of Alluvium
600±100	Jamul Quad		LJ 1992	Charcoal
700±100	Silver Strand, Coronado, CA-7	32°37'29"N 117°08'11" W	LJ 1374	Pismo Clam
700±150	Clark Dry Lake, CA	33°22.2' N 116°16.8' W	LJ-16	Charcoal-site/ dunes
710±40	Rancho Park North-1	33°02'30" N, 117°15'W	LJ 3159	Charcoal (30 cm)
760±100	Midden, Sweetwater River	32°38'49" N, 117°05'38" W	LJ 103	Charcoal-Metamorphosed
825±200	Batiquitos Lagoon, CA-5	33°05'28" N, 117°17'33" W	LJ-243	Clam
830±140	Fish Creek, San Diego, County-2	32°59' N, 116°13' W	LJ-965	Freshwater Mussel-hearth site
870±200	Batiquitos Lagoon, CA-4	33°05'28" N, 117°17'33" W	LJ-242	Clam-top midden (chione undatella)
900±100	Silver Strand, Coronado, CA-9	32°37'29" N 117°08'11" W	LJ	Pismo Clam
950±200	Chollas Creek, CA-2	32°41'43" N 117°07'19" W	LJ-37	Pismo-Clam Shell
1000±200	Batiquitos Lagoon, CA-11	35°05'01" N, 117°17'52" W	L 918	Olympia Oyster
1000±200	Batiquitos Lagoon, CA-12	35°05'01" N, 117°17"52" W	LJ 919	Scallop

APPENDIX I (Continued)

SAN DIEGO COUNTY RADIOCARBON DATES

DATE (BP)	SITE DESIGNATION	LAT/LONG LOCATION	SPEC. NO.	TYPE OF SPECIMEN
1000±200	Fish Creek, San Diego County, CA	32°59'N, 116°13' W	LJ-7	Charcoal from hearth site
1030±200	Aqua Hedionda Lagoon, CA	33°08'43" N, 117°19'70" W	LJ 335	Clam Shells
1050±150	SIO Cliff Site, La Jolla	32°52'00" N 117°15'09" W	LJ 448	
1075±150	Batiquitos Lagoon, CA-6	33°05'28" N, 117°17'33" W	LJ-245	Clam
1200±100	CW Harris Site, San Diego County-5	33°02'28" N, 117°08'35" W	LJ gap	Charcoal, Trench 4
1270±250	Spindrift Site, La Jolla CA-2	32°51'02" N, 117°15'38" W	LJ 386	California Mussel
1450±200	Chollas Creek, CA	32°41'44" N 117°07'17" W	LJ-34	Pismo-Clam Shell
1510±200	SIO Upper Cliff Series-4	32°52'07" N, 117°15'07" W	LJ 926	Pismo Clam
1620±160	SIO Upper Cliff Site, La Jolla, CA-1	32°52'07" N, 117°15'09" W	LJ-453	Pismo Clam
2100±200	Chollas Creek, CA-3	32°41'43" N 117°07'19" W	LJ-38	Pismo-Clam Shell
2140±150	Torrey Pines Park, CA-3	32°55'28" N, 117°14'52" W	LJ-968	Olypmia Oyster
2300±150	Torrey Pines Park, CA-2	32°55'28" N, 117°14'52" W	LJ-962	Clam
2800±150	La Jolla, San Diego		L-299C	
3190±200	Spindrift Site, La Jolla CA-1	32°51'02" N, 117°15'38" W	LJ-385	California Mussel

APPENDIX I (Continued)

SAN DIEGO COUNTY RADIOCARBON DATES

DATE (BP)	SITE DESIGNATION	LAT/LONG LOCATION	SPEC. NO.	TYPE OF SPECIMEN
3260±170	Jamul Quad-Prepottery Strata Date	32°88', N 115°45" W	LJ-1984	Charcoal
3290±200	Spindrift Site, La Jolla	32°51'02" N 117°15'08" W	LJ-382	
3400±240	Batiquitos Lagoon, CA-9	35°05'01" N 117°17'52" W	LJ-381	Clam
3470±175	Silver Strand, Coronado, CA-5	32°37'29" N, 117°18'11" W	LJ-593	Pismo Clam Pit
3500±200	Batiquitos Lagoon, CA-2	33°05'03" N 117°17'44" W	LJ-35	Clam Shell-midden
3550±150	C.W. Harris Site Series, CA-3	33°20'00" N, 117°09'30" W	LJ-914	Charcoal-roasting pit
3650±180	La Jollan Sweat House	32°40'30" N, 117°15'30" W	LJ-1980	Charcoal
3700±200	Midden Torrey Pines Park, CA	32°55'33" N 117°15'31" W	LJ-19	Mussel Shell-occupation layers
3850±150	C.W. Harris Site Series, CA-4	33°20'00" N, 117°09'30" W	LJ-915	Charcoal-Trench #1
3900±200	Batiquitos Lagoon, CA-1	33°05'01" N 117°17'52" W	LJ-31	Clam Shell-midden
4020±300	Silver Strand, Coronado, CA-2	32°37'33" N, 117°08'09"	LJ-211	Pismo Clam-Station A, Level III
4090±200	SIO Upper Cliff Series-3	32°52'07" N, 117°15'07" W	LJ 595	California Mussel
4100±160	Scripps Estates Site, CA-6	32°52'22" N 117°14'15" W	LJ 901	California Mussel
4230±200	Subtidal Peat, La Jolla, CA	33°51'16" N, 117°15'33" W	LJ	Peat, including frag. plant mat.

APPENDIX I (Continued)

SAN DIEGO COUNTY RADIOCARBON DATES

DATE (BP)	SITE DESIGNATION	LAT/LONG LOCATION	SPEC. NO.	TYPE OF SPECIMEN
4500±60	Del Mar-2	32.9°N 117.3° W	LJ-3175	Upper Midden (20-30 cm)
4520±220	Silver Strand, Coronado, CA-3	32°37'29" N 117°08'09" W	LJ 336	Pismo Clam
4620±200	SIO Cliff Site, La Jolla, CA	32°52'00" N, 117°15'09" W	LJ-594	California Mussel-4
4650±200	C.W. Harris Site Series-2	33°20'00" N, 117°09"30" W	LJ 909	Scallop (Plaglocte-nium circulare aequisulectum)
4650±260	Spindrift Site, La Jolla, CA-4	32°51'02" N 117°15'08" W	LJ-512	Pismo Clam
4720±160	San Diguitoan Site, CA	33°02'33" N, 117°09'10" W	LJ-136 (B)	Shell (chione californienois)
4740±200	Midden, Torrey Pines Grade, CA-3	32°55'02" N, 117°14'54" W	LJ 277	Shells of 3 pelecypods
4750±200	Batiquitos Lagoon, CA-10	33°05'28" N 117°17"33" W	LJ 912	Clam
4770±160	Spindrift Site, La Jolla, CA-3	32°51'02" N, 117°15'38" W	LJ 449	California Mussel
4840±200	Midden, Torrey Pines Grade, CA-2	32°55'02" N, 117°14'54" W	LJ 276	California Mussel
4870±200	SIO Upper Cliff Series-5	32°52'07" N, 117°15'07" W	LJ 927	Pismo Clam
4970±200	Midden, Torrey Pines Grade, CA-1	32°55'02" N, 117°14'54" W	LJ 274	California Mussel
4980±100 BP	San Felipe Valley, CA		UC 117	
5290±60	Del Mar-3	32.9° N 117.3°W	LJ 3176	Upper Midden (60-70 cm)

APPENDIX I (Continued)

SAN DIEGO COUNTY RADIOCARBON DATES

DATE (BP)	SITE DESIGNATION	LAT/LONG LOCATION	SPEC. NO.	TYPE OF SPECIMEN
5460±100	Scripps Estates Site I, CA-3	32°52'18" N, 117°14'55" W	LJ-110 (B)	Mussel Shell (M.c.) A houzon
5680±250	Scripps Estates Site, CA-5	32°52'22" N 117°14'53" W	LJ 900	California Mussel
5740±240	Scripps Estates Site, CA-4	32°52'22" N, 117°14'53" W	LJ-221	California Mussel-trench S-M-3
5930±70	Del Mar-9	32.9°N 117.3°W	LJ 3263	LM (90-100 cm)
5930±70	Del Mar-8	32.9°N 117.3°W	LJ 3262	LM (70-80 cm)
6250±150	Batiquitos Lagoon, CA-7	33°05'28" N 117°17'33" W	LJ 256	Charcoal
6300±290	C.W. Harris Site, San Diego County, CA	33°02'30" N, 117°08'55" W	LJ-202	Charcoal-large accumulation of stono (Feat #5)
6320±250	Batiquitos Lagoon, CA-8	33°05'28" N 117°17'33" W	LJ-333	Scallop Shells
6370±210	University of CA, La Jolla Site I	32°52'13" N, 117°14'44" W	LJ-225	California Mussel (Mytilus californianus)
6400±200	Torrey Pines Mesa, La Jolla, CA	32°53'59" N, 117°13'58" W	LJ-275	California Mussel
6540 BC ±400	C.W. Harris Site, CA	33°02'30" N 117°08'55" W	A 724	Charcoal and carbonaceous earth
6600±300	Solona Beach, CA midden series	33°00'15" N, 117°14'58" W	LJ 893	Shell 1-4 cm. below surface in midden
6600±400	Harris Site, CA	33°02'30" N 117°08'55" W		

APPENDIX I (Continued)

SAN DIEGO COUNTY RADIOCARBON DATES

DATE (BP)	SITE DESIGNATION	LAT/LONG LOCATION	SPEC. NO.	TYPE OF SPECIMEN
6620±60	Del Mar-5	32.9°N 117.3°W	LJ 3219	Lower Midden (100-110 cm. depth)
6680±170 BP	San Dieguito River Valley, San Diego		L 299B	
6700±150	Scripps Estates Sites I, CA-1	32°52'22" N, 117°14'54" W	LJ-79	Mussel Shell ass. w/Bur #7
6950±350	Sorrento Site, San Diego County		M 114	
7080 BC ±350	C.W. Harris Site, CA	33°02'30" N 117°08'55" W	A 722A	Charcoal and carbonaceous earth
7100±400	Cardiff, CA midden series-1	33°00'52" N, 117°16'40" W	LJ 892	Shell from bottom layer
7130±350	Midden, Point Loma, CA	32°40'32" N, 117°14'32" W	LJ 964	Clam
7140±350	Harris Site, CA	33°02'30" N 117°08'55" w		
7300±200	Batiquitos Lagoon, CA-3	33°05'01" N 117°17'52" W	LJ-36	Clam Shell-lower 2 soil horz.
7370±100	(B) Scripps Estates Site I, CA-2	32°52'18" N 117°14'55" W	LJ-109	Mussel Sehll (Mytilus coalifornianus)-caliche
7420±350	Aqua Hedionda Lagoon, CA-2	33°08'32" N, 117°18'57" W	LJ 961	Pecten
7450±370	Aqua Hedionda Lagoon, CA-3	33°08'32" N, 117°18'57" W	LJ 966	Clam
7480±400	Cardiff, CA Midden Series-2	33°00'52" N, 117°16'40" W	LJ 969	Shell

APPENDIX I (Continued)

SAN DIEGO COUNTY RADIOCARBON DATES

DATE (BP)	SITE DESIGNATION	LAT/LONG LOCATION	SPEC. NO.	TYPE OF SPECIMEN
7530±140	SIO Upper Cliff Site, La Jolla, CA-2	32°52'07" N, 117°15'09" W	LJ 454	California Mussel
8020±80	Rancho Park N-3	33°02'30" N 117°15' W	LJ 3244	Shells (40-50 cm)
8030±80	Rancho Park N-5	33°02'30" N 117°15' W	LJ 3160	Shells (70-80 cm)
8050±80	Rancho Park N-2	33°02'30" N 117°15'W	LJ 3243	Shells (Chione, Pecten) (30-40 cm)
8060±90	Rancho Park N-4	33°02'30" N 117°15'W	LJ-3245	Shells (50-60 cm)
8120±80	Rancho Park N-7	33°02'30" N 117°15" W	LJ-3246	Shells (110-120 cm)
8280±80	Rancho Park N-6	33°02'30" N 117°15'W	LJ 3261	Shells (100-110 cm)
8560±70	Del Mar-6	32.9°N 117.3°W	LJ 3220	(50-60 cm) L Midden
8490 BP ±400	C.W. Harris Site, CA	33°02'30" N 117°08'55" W	A 725	Charcoal and Carbonaceous earth
8830±70	Del Mar Series-surface lower midden	32.9°N, 117.3W	LJ 3008-1	Chione Shells (Poleo-Indian site)
8860±70	Del Mar-7	32.9°N 117.3°W	LJ 3221	(20-30 cm) L. Midde
9020±500	Aqua Hedionda Lagoon, CA-4	33°08'32" N, 117°18'57" W	LJ 967	California Mussel
9070±100	Del Mar-4	32.9°N 117.3°W	LJ 3177	(140-150 cm) depth upper midden
21,500±700	Scripps Service yard		W 142	Charcoal

APPENDIX I (Continued)

SAN DIEGO COUNTY RADIOCARBON DATES

DATE (BP)	SITE DESIGNATION	LAT/LONG LOCATION	SPEC. NO.	TYPE OF SPECIMEN
34,000	SIO Cliff Site, La Jolla, CA-I	32°52'00" N, 117°15'09" W	LJ-217	Charcoal-hearth
35,000	Texas Street Site, San Diego County		L 299 D	
43,000±2200	Coastal Archaic Shell Mid(den)	32°56" N, 117°14'05" W	LJ 1990	Charcoal
50,000	Pliestocene Beach, CA	32°54'56" N, 117°15'27" W	LJ-971	Pismo Clam

APPENDIX J

SELECTED HISTORIC DOCUMENTS

Couts, Cave. Cave Couts Collection. Huntington Library. (This collection of papers includes maps and descriptions of inland San Diego County; See Couts, 1932)

Hartnell, William. Diario del Visitador General de Missiones, 1839-1840. (Diary of the Inspector General of Missions, 1839-1940). MS, Bancroft Library. (Hartnell inspected all of the mission establishments a few years after they had been secularized.)

Hayes, Benjamin. Scrapbooks, 1850-1874. Bancroft Library. (Hayes, a southern California lawyer and judge, collected valuable documents and notes on the local history of southern California, including notes on San Diego County Native American village sites; See Hayes, 1934.)

Mariner, Juan. Diario, 1795 (Diary, 1795). Santa Barbara Mission Archives. (Mariner made explorations as far east as the foot of the Volcan Mountains; See Hill, 1927: 187-191 for a translation.)

de Ortega, Jose Francisco. Dilixencias sobre el alzamiento o sublebacion quel el dia cinco de noviembre hube, a la una de la noche, en la mision de San Diego en el ano de 1775. (News of the uprising or insurrection which occurred on the fifth of November, at one o'clock at night, at the mission of San Diego in the year 1775. MS, Doheny Memorial Library, St. John's Seminary, Camarillo, California. Copy, California Room, San Diego Public Library; also published in Rivera y Moncada, 1967, II: 429-481.)

Sanchez, Jose B. Diario de la caminata que hizo el Prefecto Payeras en union del P. Sanchez por la sierra desde San Diego hasta S. Gagriel, 1821. (Diary of the trek made by Prefect Payeras in the company of F. Sanchez along the mountains from San Diego to S. Gabriel, 1821.) Transcript, Bancroft Library. (This is a first-hand account of the missionaries' travels through inland San Diego County; See Bancroft, 1886, II: 442-43, n. 20.)

San Diego Diocese, Parish Records. Microfilm, James Copley Library, University of San Diego. (These include the records of baptisms, 1771-1855, and deaths, 1775-1825, at Mission San Diego.)

Torrent, Hilario. Informe (Report), San Diego Mission, December 31, 1789. Transcript, Santa Barbara Mission Archives. (This is another report on the 1775 uprising at Mission San Diego.)

San Diego and Arizona Railroad Collection. Special Collections, University of California, San Diego. (This is the archives and business papers of the San Diego and Arizona Railway Company.)

Velasquez, Jose. Diario y mapa de un reconocimiento desde San Diego, 1783. (Diary and map of a reconnaissance from San Diego, 1783.) Bancroft Library. (This manuscript and map describe the Fages trail through Oriflamme Canyon.)

APPENDIX K

SELECTED PHOTOGRAPHS, TITLE INSURANCE AND TRUST COMPANY, HISTORICAL COLLECTION

Subject	Date	Negative Number
Adobes		
Kern, Poway		14101
Clevenger, San Pasqual Valley	1937	10896
Agriculature		
Drying apricots, San Pasqual Valley		16113
Indians harvesting wheat, Puerta La cruz, with sickels		16397
Back country		
Near Julian	ca. 1908	15221
Grade from Warners	before 1905	—
Ballena		
Fishers Hotel		1102202
Swycaffer Adobe	1926	11022-3
" "	"	13889
W. T. Kneene Post Office & General Store	1890s	3328-A
Warnock Adobe	1859-1900	9867-A
Mulkins' place	1870s	11022
Banner		
Dont Bother Me Mine	1900	11278
Bailey's Place	ca. 1887	3583
Banner Canyon	ca. 1888	4705-1
Banner	1900	4705-3
Wilcox Toll Station ruins	ca. 1895	10794
Chariot Tunnel	ca. 1900	11284
Watering Stock, between Banner & San Felipe		14146
Ranchita Mill	1895	11222
Ready Relief Hoist & Mill	1900	11275
Ready Relief Water Wheel	1900	11272
Golden Chariot Mine	ca. 1900	11266
Hand drilling, Ready Relief Shaft	1900	11273
J. A. Noah Store	1895	3290
Campo		
Gaskill Brothers Store		3685
Old Campo Store (Gaskills?)	1899	--
Dams		
Barrett, under consturction	1918-20	1638
Escondido Dam	1910	6242
Jamul Ranch Diverting Dam	ca. 1920	4360
Wehlford Reservoir	ca. 1905	3572

Subject	Date	Negative Number
Dairies		
San Pasqual	ca. 1912	4814
Dulzura (San Diego City) Conduit	1910	499
Dulzura Intake	1910	500
Escondido (hundreds of photographs)		
Foster		
Flood, 1916	1916	6612
San Diego and Southeastern rails	1916	6620
near Foster		5997
Jacumba		
Old Pony Express (?) Station		15883-15
Railroad engineers and Indians	ca. 1900	20178
Jacumba Springs Store	c. 1918	13740
Jamul		
Jamul Portland Cement Manufacturing Works (before decay)		13031
32-mule harvester, Jamul Ranch	1902	405
" " " "	"	403
Hay Bailing	1909	401, 402, 404
Tabacco, Mr. Jones	Jul. 1923	2454
Jamul Store	1880s	1835
Julian		
(numerous)		
Missions		
Pala Mission	ca. 1887	10574
Santa Ysabel	ca. 1887	12108
Pala		
Indian Reservation	ca. 1900	15933
" "	ca. 1910	16288
" " Groves		15932
Pala Stage Station	ca. 1900	8677
Mason Valley Narrows		14173
Poway		
Horse Thresher	1903	—
Ford Truck	ca. 1910	16351
Poway Valley	1897-8	11972
Ramona		
(numerous)		
Roads		
Cottonwood Valley	April, 1910	503
Old Emigrant Road, adobe ruins	1890s	12051
Stage Road, Ramona-Julian		14170
Mountain Springs Grade	1900s	3408
Wilcox Toll Road	1895	10789
San Diego, Arizona & Eastern Railroad		
Carrizo Gorge	ca. 1918	7742

APPENDIX K (continued)

Subject	Date	Negative Number
Campo Bridge		16124
Carrizo Gorge	ca. 1918	3201
Clover Flat	ca. 1918	7735
# 2 Viaduct	ca. 1918	7756
Campo Creek Bridge, under construction	ca. 1908	7755
San Felipe		
San Felipe adobe ruins	1912	16422
San Felipe Rancho, Gus Redman	1870s	2595
San Pasqual Church	3994-1	3994-1
Santa Ysabel		
Blacksmith	1919	13580
Santa Ysabel Store	1880s	3576
Hotel Santa Ysabel	ca. 1910	16321
Stage Stations		
Aguanga	1900	11107, 9286
Fosters	1891	6126
Fosters	1904	9295
Fosters	1905	3156
Fosters	1906	11873
Julian Stage Coach	ca. 1909	3600-M
Oak Grove		1102, 8740, 2329
-Imperial Valley		7090
San Diego Limited (motorized)	ca. 1911	S-904-1
San Felipe	1900	11108
Vallecitos		12165, 14143, 14153
Warner's		9424
Witch Creek		3577
Witch Creek	1890s	12463
Trucks		
First auto truck in Ramona	ca. 1912	11971
First transcontinental trip, Sauer Motor Truck	1911	12722
Valley Center		
Old Post Office	1888	10697
Adobe Machine	ca. 1883	10699-3
Prospector & Mule	1890s	10699
George Reed Adobe	ca. 1890	10704
Warner Springs		
Warner Springs	1890s	15933, 12068, 14051
Indian Village	1890s	11136
Interior of Indian House after eviction	1903	9407

APPENDIX L

PHASE I AGENCY CONTACTS - FEDERAL

AGENCY	DATE	FORM
DEPARTMENT OF THE INTERIOR		
BLM - Barstow Area Office		
Mr. Russell Kaldenburg, Archaeologist	25 May 78	Telephone
	14 July 78	Telephone
BLM - Desert Planning Staff		
Mr. Paul W. Ernst	19 May 78	Letter
Mr. Eric W. Ritter, Lead Archaeologist	25 Apr. 78	Meeting
	11 May 78	Letter
	19 May 78	Letter
BLM - Riverside District Office		
Mr. Gary Stumpf, Acting District Archaeologist	May 78	Letter
General Services		
Mr. Paul H. Thomas, Chief, Division of General Services	08 June 78	Letter
United States Department of the Interior Museum	12 May 78	Letter

PHASE I AGENCY CONTACTS - STATE OF CALIFORNIA

AGENCY	DATE	FORM
DEPARTMENT OF PARKS AND RECREATION		
Anza-Borrego Desert State Park	12 May 78	Letter
Anza-Borrego Desert State Park		
Ms. Jan Moore, Archaeologist	28 Apr. 78 12 June 78	Telephone Letter
California State Indian Museum	12 May 78	Letter
Cuyamaga Rancho State Park		
Mr. James Geery	19 June 78	Meeting
State Historic Preservation Office		
Mr. William Seidel, Archaeologist	05 June 78	Letter
DEPARTMENT OF TRANSPORTATION		
Mr. Tim Vasquez	11 July 78	Telephone
NATIVE AMERICAN HERITAGE COMMISION		
Mr. Stephen M. Rios Executive Secretary	11 May 78	Letter
Ms. Victoria Roberts, Resources Coordinator	24 May 78	Letter
OFFICE OF EDUCATION		
California State Library	12 May 78 30 May 78	Letter Letter
SECRETARY OF STATE		
California State Archives	12 May 78 19 May 78	Letter Letter

APPENDIX L (continued)

PHASE I AGENCY CONTACTS - MUNICIPAL

AGENCY	DATE	FORM
SAN DIEGO, CITY OF		
San Diego Museum of Man		
Mr. Ken Hedges	28 Mar. 78	Letter
	04 Apr. 78	Meeting
	08 May 78	Telephone
	23 May 78	Meeting
	11 July 78	Telephone
San Diego Museum of Man	12 May 78	Letter
San Diego Public Library, California Room		
Ms. Rhoda E. Kense, Senior Librarian, California Room	30 May 78	Letter
San Diego Public Library, California Room	12 May 78	Letter
SAN DIEGO, COUNTY OF		
Department of Transportation		
Mr..Gary Fink	07 May 78	Meeting
	13 May 78	Telephone
Environmental Analysis Division		
Mr. Ron May	24 June 78	Meeting
	07 July 78	Telephone
	14 July 78	Telephone
Mr. Brian Mooney	18 July 78	Telephone
Integrated Planning Office		
Mr. Ron LaRosa	11 May 78	Meeting

APPENDIX L (continued)

PHASE I AGENCY CONTACTS - COLLEGES & UNIVERSITIES

AGENCY	DATE	FORM
SAN DIEGO STATE UNIVERSITY		
Dr. Ernest Griffin, Geography Professor	12 May 78	Telephone
Dr. Emory Quastler	11 May 78	Meeting
Dr. Frederick Stutz	11 May 78	Meeting
UNIVERSITY OF CALIFORNIA, BERKELEY		
Ms. Irene Moran, Head, Public Services	25 May 78	Letter
UNIVERSITY OF CALIFORNIA, SAN DIEGO		
Mr. Patrick O'Bannon	18 May 78	Telephone
Dr. Earl Pomeroy	16 May 78	Meeting
Dr. Richard Romo	16 May 78	Meeting
UNIVERSITY OF SAN DIEGO		
Dr. Raymond Brandes	06 July 78	Meeting
Dr. James Moriarty	06 July 78	Meeting

APPENDIX L (continued)

PHASE I AGENCY CONTACTS - INDIAN BAND

AGENCY	DATE	FORM
BARONA INDIAN RESERVATION		
Mr. Bob Beck	04 June 78	Letter
Ms. Josephine Romero Spokeswoman	16 May 78	Letter
	07 June 78	Letter
CAMPO INDIAN RESERVATION		
Ms. Valacia M. Thacker, Chairwoman, Executive Committe	16 May 78	Letter
	07 June 78	Letter
	09 July 78	Telephone
	10 July 78	Telephone
	17 July 78	Telephone
	19 July 78	Meeting
CUYAPAIPE INDIAN RESERVATION		
Mr. Tony J. Pinto, Chairman	16 May 78	Letter
	07 June 78	Letter
	11 July 78	Telephone
INAJA INDIAN RESERVATION		
Ms. Josephine Leo, Spokewoman	16 May 78	Letter
	07 June 78	Letter
	09 July 78	Telephone
LA JOLLA INDIAN RESERVATION		
Mr. Lester L. Nelson, Chairman	16 May 78	Letter
	07 June 78	Letter
	09 July 78	Telephone
	17 July 78	Telephone
	18 July 78	Telephone
	20 July 78	Telephone

APPENDIX L (continued)

PHASE I AGENCY CONTACTS - INDIAN BAND (continued)

AGENCY	DATE	FORM
LA POSTA INDIAN RESERVATION		
Ms. Marie La Chappa, Chairwoman	16 May 78	Letter
	07 June 78	Letter
	09 July 78	Telephone
	17 July 78	Telephone
	18 July 78	Telephone
LOS COYOTES INDIAN RESERVATION		
Ms. Catherine Saubel	06 June 78	Letter
	05 July 78	Meeting
Mr. Alvino Siva	06 June 78	Letter
	27 June 78	Telephone
	05 July 78	Meeting
Mr. Banning Taylor, Spokesman	16 May 78	Letter
	23 May 78	Letter
	06 June 78	Letter
MANZANITA INDIAN RESERVATION		
Mr. David Z. Elliott, Chairman	16 May 78	Letter
	07 June 78	Letter
	09 July 78	Telephone
	10 July 78	Telephone
	17 July 78	Meeting
MESA GRANDE INDIAN RESERVATION		
Mr. Jack Hamilton, Chairman	16 May 78	Letter
	07 June 78	Letter
	11 July 78	Telephone
	18 July 78	Telephone

APPENDIX L (continued)

PHASE I AGENCY CONTACTS - INDIAN BAND (continued)

AGENCY DATE	FORM	
PALA INDIAN RESERVATION		
Mr. King Freeman, Chairman	16 May 78	Letter
	07 June 78	Letter
	10 July 78	Telephone
PAUMA INDIAN RESERVATION		
Mr. Claude Devers	17 July 78	Meeting
Ms. Florence Lofton, Chairwoman	16 May 78	Letter
	07 June 78	Letter
	09 July 78	Telephone
	14 July 78	Telephone
PECHANGA INDIAN RESERVATION		
Mr. Vincent Ibanez, Spokesman	16 May 78	Letter
	07 June 78	Letter
	10 July 78	Telephone
	18 July 78	Telephone
RINCON INDIAN RESERVATION		
Mr. Edward T. Arviso, Chairman	16 May 78	Letter
	07 June 78	Letter
	09 July 78	Telephone
	10 July 78	Telephone
	18 July 78	Telephone
SAN PASQUAL INDIAN RESERVATION		
Mr. Ronald Peralta, Spokesman	16 May 78	Letter
	07 July 78	Letter
	09 July 78	Telephone
	18 July 78	Telephone

APPENDIX L (continued)

PHASE I AGENCY CONTACTS - INDIAN BAND (continued)

AGENCY	DATE	FORM
SANTA YSABEL INDIAN RESERVATION		
Mr. Ignasio Scerato, Spokesman	16 May 78	Letter
	07 June 78	Letter
	14 June 78	Telephone
SYCUAN INDIAN RESERVATION		
SANTA YSABEL INDIAN RESERVATION		
Mr. Ignasio Scerato, Spokesman	16 May 78	Letter
	07 June 78	Letter
	10 July 78	Letter
	10 July 78	Telephone
	11 July 78	Letter
	25 July 78	Letter
VIEJAS INDIAN RESERVATION		
Ms. Carmen D. Welch, Spokeswoman	16 May 78	Letter
	07 June 78	Letter
	14 July 78	Telephone
	19 July 78	Telephone
	20 July 78	Telephone

APPENDIX L (continued)

PHASE I AGENCY CONTACTS - SPECIAL INTEREST GROUPS

AGENCY	DATE	FORM
ALPINE HISTORICAL AND CONSERVATION SOCIETY	12 May 78	Letter
AMERICAN MUSEUM OF NATURAL HISTORY	12 May 78	Letter
AMERICAN PHILOSOPHICAL SOCIETY	12 May 78	Letter
	15 May 78	Letter
ARCHAEOLOGICAL RESEARCH UNIT	12 May 78	Letter
ARCHAEOLOGICAL RESOURCE MANAGEMENT SOCIETY		
Mr. William Ekhardt	13 July 78	Telephone
ARCHAEOLOGICAL SYSTEMS MANAGEMENT	12 May 78	Letter
	15 July 78	Letter
BERGMAN MUSEUM	12 May 78	Letter
Mr. Berrvman, Stan	14 July 78	Telephone
Mr. Bull, Charles	17 July 78	Telephone
CALIFORNIA HISTORICAL SOCIETY		
Ms. Laverne Mau Dicker, Curator of Photographs	23 June 78	Letter
CATHOLIC DIOCESE OF SAN DIEGO	12 May 78	Letter
	17 May 78	Telephone
CENTER FOR THE STUDY OF AMERICAN INDIAN HISTORY	12 May 78	Letter
CULTURAL SYSTEMS RESEARCH, INC.		
Dr. Lowell J. Bean	07 June 78	Letter
Ms. Cupples, Sue Ann	11 July 78	Telephone
Ms. Ekhardt, Leslie	13 July 78	Telephone

APPENDIX L (continued)

PHASE I AGENCY CONTACTS - SPECIAL INTEREST GROUPS (continued)

AGENCY	DATE	FORM
ESCONDIDO HISTORICAL SOCIETY	12 May 78 31 May 78	Letter Letter
FIELD MUSEUM OF NATURAL HISTORY		
Mr. Lorin J. Nevling, Fr., Assistant Director, Science and Education	31 May 78	Letter
FIELD MUSEUM OF NATURAL HISTORY	12 May 78	Letter
GARY FINK	07 May 78	Meeting
RALPH GASTELLUM	17 June 78	Meeting
MR. RAYMOND GIRVIGIAN	28 May 78	Letter
MR. G. W. GROSDIDIER	26 May 78	Meeting
MR. DAVID HANNA	11 July 78	Telephone
MS. DOROTHY REMALEY HARVEY	19 May 78	Meeting
HUNTINGTON LIBRARY	12 May 78 19 May 78	Letter Letter
MR. DARCY IKE	13 July 78	Telephone
MS. CHARLOTTE HOLCOMB	23 May 78	Telephone
LOUIS JUCH	08 June 78	Meeting
JULIAN HISTORICAL SOCIETY		
Mr. Milton Anderson	18 July 78	Telephone
JULIAN HISTORICAL SOCIETY	12 May 78	Letter
JULIAN MUSEUM		
Ms. Mable Carlson, Curator	18 June 78	Meeting

APPENDIX L (continued)

PHASE I AGENCY CONTACTS - SPECIAL INTEREST GROUPS (continued)

AGENCY DATE	FORM	
JULIAN MUSEUM	12 May 78	Letter
MS. LUCY KILLEA	14 July 78	Telephone
MR. J. C. LA FORCE	20 May 78	Meeting
LAKESIDE HISTORICAL SOCIETY		
Ms. Marguerite Sherman, President	25 May 78	Letter
Mr. Bill Davis	12 May 78	Letter
ROBERT H. LOWIE MUSEUM OF ANTHROPOLOGY		
Mr. Norick, Assistant Director	16 May 78	Telephone
	16 May 78	Telephone
ROBERT H. LOWIE MUSEUM OF ANTHROPOLOGY	12 May 78	Letter
MR. THOMAS LUCAS	22 June 78	Letter
	28 June 78	Meeting
MR. DICK McCAIN	17 June 78	Meeting
MR. JAMES (TULE JIM) McCAIN	17 June 78	Meeting
MS. LYDIA MENDOZA	14 July 78	Telephone
MR. P. C. MIDDLEBROOK	19 May 78	Meeting
MS. MARGE MORIN	22 May 78	Telephone
	25 May 78	Meeting
MUSEUM OF THE AMERICAN INDIAN, HEYE FOUNDATION	12 May 78	Letter
	21 June 78	Letter
MUSEUM OF MISSION SAN ANTONIO DE PALA	25 May 78	Letter

APPENDIX L (continued)

PHASE I AGENCY CONTACTS - SPECIAL INTEREST GROUPS (continued)

AGENCY	DATE	FORM
NATIONAL MUSEUM OF NATURAL HISTORY	12 May 78	Letter
MR. RICHARD NORWOOD	17 July 78	Telephone
ORAL HISTORY ASSOCIATION	17 July 78	Telephone
Mr. Stan Flandi	12 May 78	Letter
PACIFIC SOUTHWEST RAILWAY MUSEUM ASSOCIATION, INC.	12 May 78	Letter
MR. RAY PENNICK	09 May 78	Telephone
POWAY HISTORICAL AND MEMORIAL SOCIETY	12 May 78	Letter
RAILWAY HISTORICAL SOCIETY OF SAN DIEGO	12 May 78	Letter
RAMONA PIONEER HISTORICAL SOCIETY	12 May 78	Letter
MS. LEONA RANSOM	10 May 78	Telephone
RECON	12 May 78	Letter
MR. & MRS. RAY REDDING	18 June 78	Meeting
SAN DIEGO COUNTY ARCHAEOLOGICAL SOCIETY	25 May 78	Letter
MR. RICHARD KAHDASH	14 July 78	Telephone
SAN DIEGO HISTORY RESEARCH CENTER		
Dr. Steve Colston, Acting Director	12 May 78	Meeting
SAN DIEGO HISTORICAL SOCIETY	12 May 78	Letter

APPENDIX L (continued)

PHASE I AGENCY CONTACTS - SPECIAL INTEREST GROUPS (continued)

AGENCY	DATE	FORM
SAN DIEGO HISTORICAL SOCIETY		
Mr. James Moss, Executive Director	10 May 78	Meeting
SAN DIEGO HISTORICAL SOCIETY		
Mr. Larry Booth, Curator/ Photo Archivist	02 May 78	Meeting
MS. DOROTHY CLARK SCHMID	18 May 78	Letter
	22 May 78	Letter
SERRA MUSEUM	12 May 78	Letter
MR. DON SHANNON	11 July 78	Meeting
SOUTHERN METHODIST UNIVERSITY		
Mr. David J. Weber, Department of History	18 May 78	Letter
	24 May 78	Letter
SOUTHWEST MUSEUM	12 May 78	Letter
SOUTHWEST RAILWAY LIBRARY		
Eric Sanders	18 June 78	Letter
TITLE INSURANCE & TRUST COMPANY		
Ms. Jane Booth	31 May 78	Meeting
WESTEC SERVICES, INC.	12 May 78	Letter
	30 May 78	Letter
Mr. Richard Carrico	08 May 78	Telephone
	01 June 78	Meeting
Mr. Frank Morris	01 June 78	Meeting
MR. GUY WOODWARD	12 July 78	Telephone

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